

Railway Age

SECOND HALF OF 1924—No. 16

NEW YORK—OCTOBER 18, 1924—CHICAGO

SIXTY-NINTH YEAR



You Would Fire Such a Workman!

A NY mechanic who spoiled one piece out of every ten he worked on would soon be seeking another job.

Yet many a firebox is guilty of just such a waste. Fortunately there are not so many of this kind as there once were. Over 2,000 of them were caught at it last year and made to change their ways.

This number of old locomotives had their fireboxes equipped with Security Sectional Arches to secure useful work from the 10% of coal that once was wasted. It's a quick, easy job to reform the remainder.

Every day of delay is costly.

AMERICAN ARCH COMPANY, Inc.

Locomotive Combustion Engineers

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NEW YORK



McCormick Building
CHICAGO

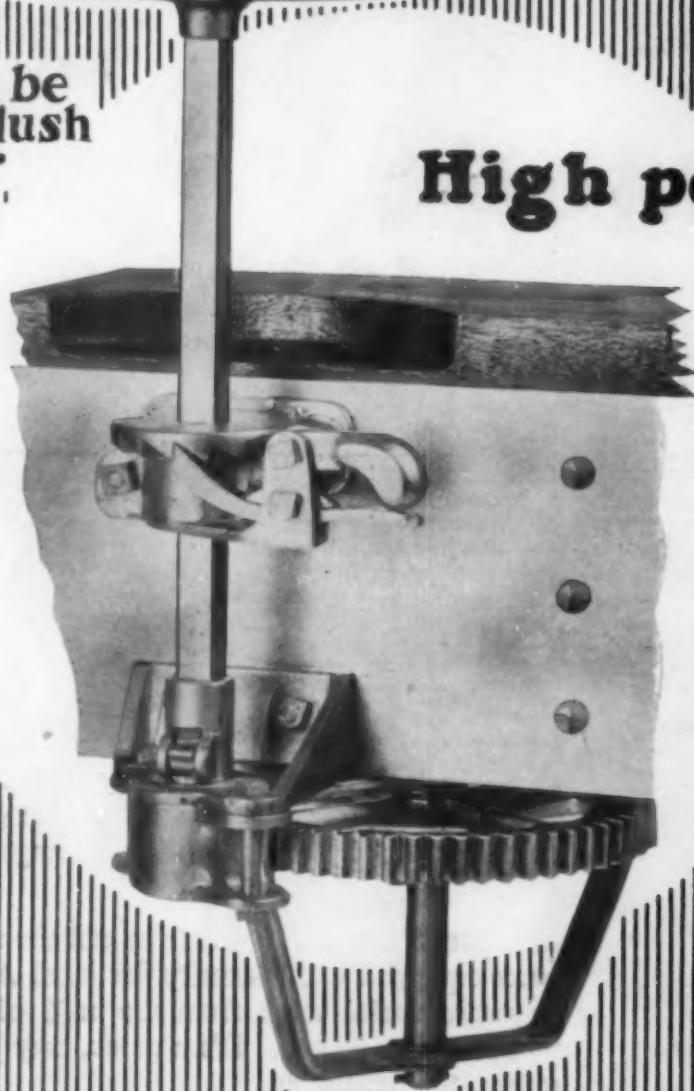


Urecos

Wheel can be
dropped flush
with floor

High powered

Drop
Brake
Shaft



Union Railway Equipment Co.
McCormick Building
Chicago

Volume 77

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Number 16



EDITORIAL

Railway Age

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We publish elsewhere in this issue an able address on "Advertising as a Factor in Molding Public Opinion" which recently was delivered by P. L. Thomson.

Advertising and Public Opinion son, president of the Association of National Advertisers. What Mr. Thomson said may well be read and pondered carefully by the higher officers of the railways and all who, on their behalf, are struggling with the problem of creating a sound public sentiment. There has been a real awakening of the officers of public utilities and railroads within recent years to the necessity of telling the public the facts about their business and presenting the reasons why it is in the interest of the public to adopt a constructive and fair policy in the regulation of these industries. It is probable that the interest in and activity in dealing with this problem have been greater on the public utilities than on the railroads. The American Telegraph and Telephone Company has been a leader in this field. The public utility companies in and about Chicago whose management is under the general direction of Samuel Insull, also have been leaders. Many railways recently have been telling their story to the public better than before, but the existing situation in the railroad industry is sufficient evidence that much more remains to be done. Either the public must be made to better understand the actual methods of management, the financial results and the problems of large business concerns or the radical movement against them will gain a strength which will result in national disaster.

Apparently one of the most important developments of the year in handling locomotive maintenance work at engine terminals is that instituted by the

Locomotive Maintenance at Terminals Union Pacific under the direction of O. S. Jackson, superintendent of motive power and machinery, as described elsewhere in this issue. The

plan developed may be summarized as the provision of specialized gangs to handle maintenance work on the various classes of locomotives at regular intervals which in the case of the Union Pacific are arranged on a 30-day basis. In other words, when a locomotive is taken into an enginehouse for its regular monthly inspection and washout, a gang of men familiar with this class of locomotive and thoroughly trained in caring for it, does all of the repair work necessary to condition it for another month of service. Many minor defects which might otherwise cause engine failures are corrected at this time and in fact the officers of the Union Pacific credit this plan with a reduction of 60 per cent in freight locomotive failures and 47 per cent in passenger locomotive failures during a period of six months. In addition, the number of man-hours per engine per month required for inspection and repairs has been decreased 10 per cent with a consequent saving in labor cost and a decrease in the time which locomotives must spend at terminals. Improved maintenance has admittedly had an important bearing on the success of the Union Pacific in establishing long engine runs. The advantages of making periodical repairs to locomotives at terminals by specialized gangs are summarized as more reliable power, decreased cost of upkeep and an increased number of engine hours available

for service. The experience of the Union Pacific with this plan seems to indicate that it is well worth the consideration of other roads.

With the formation of the German Government Railway Company—"Reichseisenbahn Gesellschaft"—for the operation of the railways of Germany on a

German Government Quits Railroading business basis as a means under the Dawes plan of paying reparations, the advocates of government operation of railroads have lost what was once their favorite exhibit. Before the war the German railroads were owned by the several states—five-eighths by Prussia—and were run as ordinary government departments. In 1920, however, all the railroads were turned over to the federal government. The newly formed company will take over these lines from the government and operate them, with due regard for the requirements of the German people and German business, as a money-making enterprise. This is the largest railway system under one management in the world—33,000 route miles. It is capitalized at about five billion dollars and its gross revenue should approach a billion. Generally speaking, its physical condition is excellent and it is practically free of debt. In spite of this the lines have not been paying. Simply by a substitution of business management for the bureaucratic methods of government operation, the experts for the Dawes committee, M. Levere and Sir William Acworth, estimate that the present losses of the system can be converted into net earnings of \$250,000,000 a year. Could there be any more eloquent testimony regarding the relative efficiency of private as compared with government operation?

The kind of competition which American manufacturers of machine tools must meet in selling railroad shop machinery

Foreign Machinery Competition in foreign fields, is strikingly illustrated by the following case. Last August the Shanghai-Hangchow-Ningpo Railway of China was in the market for a coach wheel lathe. The only American

machinery house to bid on this tool submitted a price which, including the lathe, motors, attachments, freight and five per cent duty at Shanghai, amounted to slightly over \$17,000. Six English and ten German firms also submitted bids on this coach wheel lathe and the lowest price (from a German bidder), converted into dollars, amounted to slightly less than \$5,000. The highest English and German quotations were approximately \$13,000 each, or \$4,000 less than the American bid. The variation in price of \$8,000 between the lowest and highest foreign bids bears out the report that two kinds of machinery are being made in England and Germany, particularly the latter; namely, a limited amount of carefully-made, high-grade machine tools with many refinements and attachments and, on the other hand, a tremendous quantity of inferior, imitation products with nothing but a low price to commend them. These inferior machines will never give any real competition owing to the fact that they cannot meet the service requirements of railroad shops, the machinery for which is expected to stand up under heavy duty for 10 to 15

years or perhaps more. The high-grade foreign tools, however, are a factor in the situation, and will be as long as foreign labor rates are low and the material and labor from which the machines are made can be paid for in depreciated currency. An offsetting factor in favor of the American manufacturer is the heavy tax necessary to meet interest payments on enormous war debts in most foreign countries. This tax is borne largely by industry and must be passed on to the ultimate consumer by means of increased prices of manufactured products. In addition to these taxes Germany, under the terms of the so-called Dawes plan of reparations, must pay a tax of 26 per cent on the value of all exports to England, France, and Belgium. Another important advantage of the American manufacturer in his attempt to secure a market for railroad shop machinery in foreign fields, is his highly standardized product and relatively large production. In the first place, the United States is the largest single producer and user of machine tools in the world and foreign trade in these tools, while in many cases important, still is more or less of a side issue. The normal demand in this country alone is sufficient to warrant the use of special machinery and production methods in building machine tools which greatly reduce labor cost and overhead expense. The inherent strength of the American position is shown by the fact that in 1922 (the latest figures immediately available) over 12 million dollars worth of metal working machinery was exported to foreign countries.

Ten Years' Changes on an Average Mile of Railroad

THE HISTORY of the railways of the United States during the last decade has been a troubled one. It has been a period of unprecedented changes in operating costs, rates and earnings. Ten years ago the railways already had been long engaged in a struggle to secure advances in rates to offset increases in operating expenses which had been greater in proportion than increases in earnings, in consequence of which the percentage of net return earned upon property investment had pretty steadily declined since effective Federal regulation was adopted in 1906.

The year ended on June 30, 1913, was one of record-breaking business, but in that year the percentage of return earned was smaller than in previous years of good business. It is interesting to compare the operating and financial results of the railways in 1913 with those of the year 1923, because such a comparison shows the sum total of the effects produced upon the railways by the war, government operation and their subsequent management and regulation under the Transportation Act. They handled more freight business in 1923 than in any previous year. They received for handling the business of that year higher freight and passenger rates than were ever paid in 30 years except in 1921 and 1922. Many people believe that in consequence the owners of the railways received a large return.

The Interstate Commerce Commission in its annual statistics for 1922 has published a very complete and valuable statistical record of the railways for the 32 years 1890 to 1922, inclusive. The complete statistics of all the railways for 1923 are not available. The statistics of the Class I roads for 1923 are available, however, and by assuming the same relationships between the Class I roads and all the roads in 1923 as actually prevailed in 1922 it is possible to estimate the statistics of all the roads for 1923 with approximate accuracy.

We have made these estimates for 1923 and computed the statistics for 1913 and 1923 upon a "per mile of line operated" basis. The results are given in the accompanying table. The statistics show that the net capitalization of the railways—that is, stock and evidences of indebtedness not

owned by railway companies and therefore actually outstanding in the hands of the public—increased from \$65,861 to \$71,321 per mile, or 8.3 per cent. The investment in property increased from \$65,700 to \$86,147, or 31 per cent. The increase in net capitalization per mile was only \$5,465, while the increase in property investment was \$20,447. It is difficult to account for the wide difference in these figures. Undoubtedly it is chiefly due to the fact that a large part of the investment in property within these ten years was made from net operating income which the railways might rightfully have paid out in dividends. It was made by some companies after paying dividends and by many other companies which paid no dividends but invested in their properties all the earnings they had left after paying interest on their debts.

We will not restate in the text of this editorial all the statistics given in the table. It will be noted, however, that

	All United States Railways, Excepting Switching and Terminal Companies			Per cent Increase increase
	1923	1913	Averages for mile, 1923 and 1913	
Net capital outstanding:				
Stock	\$27,354	\$24,962	\$2,392	9.6
Bonds	43,967	40,899	3,068	7.5
Total.....	\$71,321	\$65,861	\$5,460	8.3
Investment in property...	\$86,147	\$65,700	\$20,447	31
Miles of track per mile operated	1.64	1.50	.14	9.3
Total number locomotives.....	68,980	65,597	2,921	4.4
Average tractive power (lbs.)	37,441	30,258	7,183	23.7
Total tractive power (lbs.) 2,582,680,000	1,984,834,000	597,846,000		30
Average tractive power per mile of line operated...	10,036	7,830	2,206	28
Freight cars owned.....	2,377,513	2,298,478	78,835	3.43
Average capacity (tons).....	43.7	38.3	5.4	14.1
Total capacity freight cars.....	103,888,578	88,031,707	15,856,871	18
Average capacity freight cars per mile of line operated	4,037	3,472	565	16.3
Passenger cars owned.....	57,208	52,717	4,491	8.5
Average number of employees per mile operated	*7.88	†7.5	.38	3
Average wages per mile operated	*\$12,773	†\$5,666	\$7,107	125
Traffic density:				
Ton miles per mile of line	1,616,470	1,190,397	426,073	36
Passenger miles per mile of line.....	148,685	136,792	11,893	8.8
Gross earnings per mile..	\$26,380	†\$13,169	\$13,221	100
Operating expenses per mile	\$19,403	†\$9,223	\$10,180	110
Taxes per mile.....	\$1,318	†\$503	\$815	162
Net railway operating income per mile.....	\$3,701	†\$3,321	\$380	11.4
Per cent of net operating revenue to property investment	4.29			5.05 Decrease .76

*Class I roads.

†Classes I and II.

the increase in the total number of locomotives was only 4.4 per cent; but the increase in the average tractive power was large and in consequence the increase in the tractive power of locomotives per mile of line operated was 28 per cent.

Likewise, the increase in the total number of freight cars was only 3.43 per cent; but the increase in the average capacity was large, and the increase in the capacity of freight cars per mile of line operated was 16 per cent. The increase in the number of employees per mile operated was only 5 per cent, while the increase in the wages paid on each mile of line operated was 125 per cent. With these increases in the capacity of equipment and in the number of employees the railways handled 36 per cent more freight business and almost 9 per cent more passenger business per mile of line operated.

When we come to the statistics regarding earnings and operating expenses they tell a remarkable story. The increase in total earnings per mile was \$13,221, or slightly more than 100 per cent. The increase in operating expenses per mile was \$10,180, or 110 per cent. Of this increase in operating expenses, \$7,170, or almost 70 per cent, was due to increased wages paid to employees. The most striking

increase of all, however, was that in taxes, which amounted to \$815 per mile, or 162 per cent.

How much of the increase in earnings was left, after these increases in wages, other operating expenses and taxes had been met, to pay a return to the owners of railway securities? The increase in net operating income was \$380 per mile. This was less than 3 per cent—or about one thirty-fifth—of the increase in total earnings. It was only between five and six per cent—or about one-eighteenth—as great as the increase in wages paid. It was less than half as great as the increase in taxes paid. The increase in net operating income was much less in proportion than the increase in property investment. In consequence the net return earned upon the property investment in 1913 was 5.05 per cent, while in 1923 it was only 4.29 per cent.

In the present political campaign the railways are the principal specific object of the attacks being made by the socialist-labor group under Senator La Follette's leadership upon the so-called "capitalistic" system of industry. Government ownership of railways is being advocated largely upon the ground that under the system of government regulation and private ownership the "capitalists" who are alleged to own the railways derive excessive profits from them while their employees do not get high enough wages. How is it possible for railway employees to accept, to be influenced by and to even help disseminate this kind of propaganda, when the facts show that for every increase of \$1 in the return the railways have earned for their security owners within the last decade they have paid out more than \$18 in increased wages to their employees?

It is also claimed that under government regulation and private management the interests of the public are sacrificed in order to produce dividends for the capitalists. How can such propaganda exert any influence upon public sentiment when the facts show that within the last ten years the increase in the taxes the public has collected from the railways has been \$815 for every mile of line operated while the increase in the net operating income earned for the security owners has been only \$380? Finally, how can the people believe that the Transportation Act has enabled the railways to earn excessive profits, when the facts show that in 1913, seven years before the Transportation Act went into effect, they earned 5.05 per cent on their property investment, while in 1923, the best year financially they have had since the Transportation Act went into effect, they earned only 4.29 per cent on the same basis?

It is argued in defense of present railway wages that the purchasing power of the dollar has declined and that therefore the employees must be paid more dollars in order that they may maintain and improve their standard of living. But the owners of railway securities get their interest and dividends in the same depreciated dollar in which the employees receive their wages. Now, while the average wage of labor has been much more than doubled, the net operating income earned by the railways per mile has increased less than 1½ per cent. It necessarily follows that the net operating income earned for the security owners has only about half as much purchasing power as it had ten years ago. In other words, while there has been a nominal increase, there has been an actual great reduction, in the return earned for the security owners.

The investors in railway securities make it possible for railway service to be rendered. Directly and indirectly they have during the last ten years increased the investment in every mile of railroad property by 31 per cent. They have made it possible for the freight service rendered to the public on each mile of line to be increased 36 per cent. Because of advances in rates and increases in traffic the total earnings have doubled. The wages of the employees have been more than doubled. Meantime, the return earned by the railways upon each dollar of capital invested has been largely reduced. Surely, in view of these facts if anybody has reason to com-

plain about the results of government regulation and private operation it is not the employees or the public, but the owners of railway securities.

The Movement for "Peaceful Sabotage" of Private Property

THE MOST REMARKABLE thing about the radical movement which is being led, at least nominally, by Senator La Follette, is the inconsistencies that it involves.

Its leaders denounce the government for its alleged failure to pay the postal employees reasonable wages. At the same time they ask railway employees to vote for government ownership of railways upon the ground that it will result in higher wages for them. How can railway employees believe that they would be better paid if they were government employees when the facts show that they already are much better paid than the postal employees and when their own leaders are denouncing the government for not paying the postal employees fairly?

The radicals are trying to get the votes of both the farmers of the west and the working men of the industrial east. The farmers of the west really have suffered for some years because prices of most of their products have been low compared with the prices of most of the things they have had to buy. The high prices they have had to pay have been chiefly due to the high wages which employees of railways, manufactures, coal mines and other industries have succeeded in getting and maintaining. Working men in industry are receiving much higher wages in proportion to the cost of living than they did before the war. If the farmer is to prosper he must get prices for the things that he sells that will be higher in proportion to the prices of the things that he has to buy. He is doing this now and if he continues to do so, the effect will be to increase the cost of living of the workingman in proportion to his wages. The inconsistency of trying to unite the western farmer and the working man in a movement to maintain the prosperity of the working man at the expense of the farmer and at the same time increase the prosperity of the farmer at the expense of the working man, is obvious.

Senator La Follette, in each of his speeches, denounces the so-called "monopolies", meaning thereby the big business concerns of the country. The socialists, in their economic philosophy, favor increase in the size of business concerns, because they seek establishment of a regime under which all concerns in each line of business would be consolidated under public ownership. Nevertheless, the socialists who welcome increase in the size of business concerns and seek the establishment of one grand and universal monopoly, are supporting Senator La Follette in his campaign against so-called "monopolies."

What is the explanation of these patent inconsistencies? It is simple enough. The socialists and communists know that the best way in which to promote the cause of socialism is to stir up discontent with present conditions and institutions among all classes of the people. They know that the more people they can make discontented the more people they will be able to get to vote for politicians who seek, by various kinds of legislation, to disrupt the existing industrial and political institutions of the country. The socialist program is one of "peaceful sabotage" against the "capitalist" system. They always have, and always will, favor any policy which tends to destroy the opportunity to make profits in private business, because the more profits can be reduced in private business the more difficult it will be for the institution of private property to maintain itself. There are two kinds of sabotage. One is sabotage by violence which consists in destroying the physical property of the private capitalist. This is the sabotage practiced by the Bolsheviks and the true

communists. The other kind is peaceful sabotage which consists in destroying the earning capacity of private property and thereby rendering it valueless to its owner and making it more easy for the socialist state to confiscate and take it over.

The present political movement of the radicals is essentially and fundamentally one of peaceful sabotage. The program they are carrying on against private ownership and management of railways illustrates the point. They advocate government ownership of railways. At the same time they also advocate a policy of railway regulation which includes reductions of rates without any corresponding reductions of operating expenses and taxes, and a reduction of the valuation of the railways as a means of reducing the net return that the owners may receive to such an extent as would involve actual and immediate confiscation of at least one-third of the investment in the railways.

The program of the socialists and other radicals who are backing La Follette is one of stirring up popular discontent which will promote peaceful sabotage of all kinds of private property and thereby pave the way to universal confiscation and the establishment of the socialist state. They care nothing about how many inconsistencies there may be in their methods or arguments so long as they tend to attain the desired end.

Do Employees Desire "Industrial Democracy"?

EARLY in the fall of 1920 the *Railway Age* in a series of editorials outlined a method whereby "industrial democracy," one of the chief goals of a large part of the radical movement in this country, might be achieved without overturning the established order of industry and society. Briefly, the plan we outlined involved the purchase of a controlling interest in the railways by the employees. An idle dream? Perhaps—yet, as we pointed out at the time, control of a majority of outstanding railway stock could be secured at market prices then prevailing for a little less than two billion dollars. Market prices have advanced somewhat since that date, but at present prices a majority of outstanding stock could be obtained for about two and a half billions. A large sum of money truly—yet railway employees in 1923 received wages totaling over three billion dollars. In other words, if railway employees would save 20 per cent of their wages for five years and invest these savings in railway stock, they would control the railways in less than five years!

To be sure, a concerted buying movement such as this would probably cause stocks to rise in price, but, on the other hand, an absolute majority stock ownership is not necessary for control in all companies, and we have included non-voting preferred stock as well as common stock in our estimates.

The Plumb plan for achieving "industrial democracy" at public expense was first put forward in 1919—five years ago—and its adoption is no nearer today than it was at the time of its inception. Meantime, if railroad employees had sought what their leaders said they wanted by the customary and honorable method of purchase instead of chasing the will-o'-the-wisp conjured up by the late Mr. Plumb, they could today be enjoying complete control of the railways. That the unions are able to pool their financial strength is shown by the growth of labor banks. They can begin the acquisition of control of the railways at any time they desire. The only hindrance in the achievement of "industrial democracy" in an orderly manner is apparently the lack of desire to achieve it in this fashion.

That there may be no doubt on this point, however, and that employees be given every opportunity to acquire

the control of the railways if they so desire, Jean Paul Muller, an attorney of Washington, D. C., who is thoroughly familiar with matters of railway finance, has prepared a plan whereby the present owners of the roads would assist in every way in enabling the employees to acquire control of them. Mr. Muller's plan is published on another page of this issue, and we recommend it to the attention of all our readers. Briefly, it would provide for an employees' purchasing fund to be set up on each railway to be controlled by a board of managers chosen by the employees themselves and acting in co-operation with a representative appointed by the board of directors of the company. Into this fund the employees would pay 10 per cent, or 20 per cent, or some other agreed-upon proportion of their wages, and the board of managers of the purchasing fund would decide whether money so accumulated should be invested in outstanding stock or should be used for subscribing to new stock which the directors might issue to care for current capital requirements. This alternative would tend to keep the market for outstanding stock from rising unduly under heavy buying, and would also meet the needs of the railroads for new capital. As the employees acquired a larger and larger control, they would elect more and more of the directors, gradually acquiring control of the boards.

The fundamental difference between the kind of employee control proposed by Mr. Muller and that proposed by the Plumb plan is that, whereas under the latter the employees would share in all profits but would not assume any of the losses, under the Muller plan financial responsibility would be complete. If extortionate wages should cut profits to the bone, there would be no dividends. Employees could not expect to have both the bird in the hand and two in the bush.

On the other hand, the Muller plan has a number of advantages over the Plumb plan from the employees' point of view. In the first place, any increased efficiency would redound wholly to their benefit instead of necessitating the sharing of its fruits with others, as would be the case under the Plumb plan. In the second place, the stake of the employee in the business, entailing a loss of dividends if the business were inefficiently conducted, would be a double incentive toward earnest endeavor, making the likelihood of profit that much greater. The Plumb plan provided rewards for efficiency but no penalty for inefficiency. The willing worker, if the Plumb plan were in effect, would have no assurance that his extra efforts would not be counteracted by the sloth of some fellow-worker. The penalty of loss of dividends on an investment which could certainly earn them elsewhere and the endangering of his capital investment should be sufficient to stir the most sluggardly to action; so the willing worker-owner would have little to fear from the laziness of others—whose inefficiency would not under the Plumb plan be penalized. The owner of a business ordinarily is a great deal more interested in it than the workers, even though they are spurred on by bonus payment, which is about all the Plumb plan amounts to from the standpoint of production. The Muller plan, moreover, would end the much declaimed-against "absentee ownership" of the railways, which the Plumb plan would not do, since it would merely substitute the people of the United States for the present railway stockholders.

It seems not unreasonable to suppose that the Muller plan, if put into operation, would bring an increase in railway efficiency. It ought to put an end to wage controversies and strikes. It ought to end the agitation for government ownership on the part of the employees. If successful it might provide a precedent in quieting the complaints one hears against the present organization of industry without recourse to socialism or other economic and political heresies—a precedent which might possibly save this country from the state at which several European countries have arrived and to which many others are headed.

We are not, of course, advising an instantaneous accept-

ance of this plan and its universal application. The most that we either expect or desire at the present time is full and intelligent consideration of it. The problem is much too involved to allow hasty action of any kind. The plan, however, whatever its shortcomings may be, offers a concrete method of consummating a form of industrial organization which the *Railway Age* has long thought to be feasible and in many ways desirable. Moreover, whether the plan were finally put into operation or not, it might nevertheless be well to offer to the unions the opportunity of showing to the public whether they really desire industrial democracy, achieved in an honorable manner, or whether their only desire is to use their political power to get something for nothing.

Should Dining Service Be Expected to Pay?

FEW, IF ANY, railroads in the United States or Canada are making money from the operation of their dining cars. All, of course, are trying to make them profitable but the methods employed vary widely. It is a difficult problem for no railroad officer likes to see regular deficits incurred by a purely accommodating service.

The losses from dining car operation are due primarily to the high overhead charges and irregular patronage. The experience of a large western road is typical. Approximately 813,000 meals were served in the dining cars of that road in 1923 and the average price paid per meal was 89 cents. But the wages of employees, laundry expenses, upkeep of silver, crockery and glassware, fuel for cooking, ice and water and food supplies brought the cost of each meal up to \$1.14, making a net loss per meal served of 25 cents, and a total loss for the year of \$210,000 without including the cost of heating, lighting and hauling the cars or the interest on the investment in the equipment.

The results on other roads are similar. The last figures available show that the railroads as a whole lose 26 cents on every meal they serve. The obvious way to correct this condition is to increase the price of the food served or to lower the quality of the service. Dining car service in many cases is unnecessarily elaborate and savings might be made if the service were more ordinary, without displeasing patrons. But increasing prices have a tendency to decrease patronage with a consequent increase in overhead costs so that the losses persist. It is doubtful if the railroads as a whole—considering the lightly traveled lines as well as the heavily traveled ones—could fix a price for the meals their dining cars serve which would pay the cost of the service, for high prices keep passengers out of the dining car and low prices do not bring in enough revenue. There is apparently no golden mean.

There is one way, however, in which railroads can turn their losses into a profit. That way is to serve meals that will attract passengers to their trains. Most railroads spend many thousands of dollars annually for advertising. A well managed dining car service is one of the most effective forms of advertising that is available and at a loss of even 25 cents or more per meal is cheap at the price. One unfailing source of conversation among traveling men is the dining car service of the railroads which they use. It is noticeable that in a great many cases travelers prefer one road or another for no other reason than that it offers the best meals at the most reasonable prices.

A pleased passenger is the best advertisement a railroad can have. A disgruntled passenger, on the other hand, can and often does nullify a thousand dollars worth of paid advertising. It is certainly worth while, then, for railroads to look to their dining car service and see that they are mak-

ing up in favorable advertising the losses they are incurring for every meal that they serve. A 25 cent loss on a meal is not a loss if that meal is the cause of a passenger's purchasing a ten, twenty or thirty-dollar ticket.

It will be extraordinary if the railroads ever succeed in making the direct revenue from their dining cars equal or exceed the direct cost of their operation. But they can charge off their losses and write them in as profits if they utilize the opportunity offered by superior dining car service to popularize their trains.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Elements of Land Economics, by Richard T. Ely and Edward W. Morehouse. See Index under transportation facilities for discussions of their effect on land values, utilization, and so on. 363 p. Pub. by Macmillan, New York. \$3.50.

Eye Hazards in Industrial Occupations, by Louis Resnick and Lewis H. Carris. Discusses nature and causes of eye injuries, means of prevention, first-aid treatment, the conduct of an intensive "safety-first" campaign, selection of goggles and masks, etc. 250 p. Pub. by National Committee for Prevention of Blindness, Inc., New York City. \$1.50.

Railways for All, by J. F. Gairns. Written in popular style, with large print, this book discusses the history of railroads, the longest bridges, the fastest expresses, remarkable engineering feats, railway organization, and other details of general interest. 384 p. Pub. by Ward Lock & Co., Inc., London, England.

The Reorganization of the German Railways, by Sir William Acworth. Reprinted from London Times of Sept. 19 and 20, 1924. 23 p. and insert. Issued by Ivy L. Lee, New York City.

The Spirit of the Burlington, by Hale Holden. President Holden's address at banquet of Veterans' Assn. of the Burlington Route, Lincoln, Neb., Oct. 6, 1924. 19 p. Publisher not given, but probably available at the offices of the Chicago, Burlington & Quincy, Chicago, Ill.

Periodical Articles

Civilization—the Perilous Adventure, by Elton Mayo. Discussion of industrial and social unrest as a symptom of mal-adjustment of the human factor to a mechanical civilization, with suggestions as to possibilities of research into human behavior, and psychology to effect better adjustment. Harper's, October, 1924, p. 590-597.

Employe and Customer Ownership of Electric Railways, by Thomas Nixon Carver. "Another misstatement is that through government ownership, the workers would become, in effect, the owners of the plant in which they work. The employes of the city hall do not own the city hall; the public school teachers do not own the school buildings. The employes of the federal government do not own the buildings or the navy yards in which they work." Aera, October, 1924, p. 372-382.

Predicting Earthquakes, by T. A. Jaggar. The scientist in charge of the Hawaiian volcano observatory discusses methods of studying earthquakes and volcanic eruptions, and the value of the results to bridge and tunnel and dam builders, and construction engineers generally. Scribner's, October, 1924, p. 370-382.

The Union Pacific.—The First Trans-continental Railroad. Second of a series on history of American railroads. Editorial comment, p. 21. Shipper & Carrier, October, 1924, p. 6-11.

Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.]

The Railroads Are Not Free From Fault

JACKSONVILLE, Fla.

TO THE EDITOR:

I have read your editorial in the issue of September 6 entitled "Fine Points in Crossing Safety," and a great deal of other material relating to the same subject. I appreciate the magnitude of grade crossing hazards and realize that as long as they exist and fools drive cars, accidents will inevitably follow.

After considerable thought given to the grade crossing problem, however, I have arrived at the conviction that the railroads are about as deep in the mire as are the automobileists by reason of the general lack of suitable signs indicating the presence of a crossing. I have personally noted numerous crossings, and there are no doubt thousands of others, with nothing to indicate their existence except the familiar post with the diagonal cross set at one side of the highway out of the range of the ordinary automobile headlight and, therefore, for all practical purposes nonexistent.

It is my opinion that suitable signs of a stationary character, preferably spanning the highway and of standard design and without illumination, would be adequate. I have noted the beneficial results of the North Carolina grade crossing stop law, but believe the improved and plainly visible grade crossing signs installed as a result of this law are entitled to more credit for the decrease in accidents than the stop law.

C. G. McCUALEY,
Superintendent, Jacksonville Terminal Company

The Public Is the Boss

CHICAGO.

TO THE EDITOR:

The editorial which appeared in the *Railway Age* of August 30 entitled "The Public is Always Right" is most interesting. However, a little experience in meeting and dealing with the public should convince one that it is wrong at least as often as it is right; if not more often. But this conclusion should not cause one to forget the fact that the public, as the buyer, is always boss. In fact, the buyer is always boss except for the few occasions when he must, or believes he must, buy.

The writer was once able to improve rather indifferent human material at points of contact with the public, such as ticket windows, by the suggestion that the public is one's boss because it pays his wages. The public may be wrong; it usually is; but it is one's boss, so speak softly to it. Any boss may abuse his authority and bring about a rebellion. The railroads were able, for some years, to reverse the natural position of buyer and seller. The resulting rebellion culminated in the present regulation, sometimes oppressive, but in reality merely discipline of a servant for past indifferent service and rapacity.

The railroads as a buyer of material should be boss, although some of the purchases cause one to wonder if material men have not gotten the upper hand. There have been cases where owners or operators of railroads have taken profits indirectly. We have the present situation where the Interstate Commerce Commission seems to have been twisted into a selling agency for train control devices and there are signs of an effort to use that body as a club to force the purchase and use of a new air brake.

If a railroad as a buyer was disagreeable, ignorant or foolish, would it be right because of its role of buyer and therefore boss? Is the public, when it is disagreeable, ignorant or abusive, always right? Poppycock! No more than the railroads were always right when they forgot who was boss. No boss is always right; in fact, if he sees clearly he knows himself in luck to be right half the time.

What the railroad has to sell is service. The public which buys service, even a ten cent local ticket, is the boss because it makes the railroad possible. That is not saying there are no limits to what the public may do or demand. But service, service, service, and the buyer is always boss (potential, if not actual).

S. S.

Flagmen 100 Per Cent Efficient

AKRON, Ohio

TO THE EDITOR:

In your issue of September 27, page 533, M.W.E. says that the ideal flagman is one thoroughly imbued with the importance of carrying out the rules.

When this is accomplished the trainmasters will have something to be proud of and will have solved half of the problem of preventing rear collisions.

This is not impossible; but it requires first, that suitable trainmen be selected to be used as flagmen, also that the man has been sufficiently long in the service before being promoted as a flagman. Second, that he be given an examination that will develop whether he understands what is required in the way of flagging equipment and its care; also the proper method of flagging a following train by day or by night and in foggy or stormy weather. Of course, after the proposed flagman has demonstrated to his examiner that he understands when and how to use his flag, etc., then it is proper that he further illustrate what he would do properly to protect his train under any and all circumstances. See that the fact is made clear to him that the protection of his train is *his first duty*. It is not proper for him to permit *anyone* to interfere in *any way* with the performance of this important duty. Also, he must not depend on long straight lines, automatic signals, yard limits or hearing, but must comply literally with the rule, which states that he must go back immediately and a sufficient distance to insure full protection. This we have always taught is to go back far enough (at that particular location) so that a following train, running at the highest rate of speed, will have time after being properly flagged, in which to stop.

To what extent do the trainmasters of America find it practicable to keep all of their passenger flagmen and conductors keyed up to this high standard? Answering the question of M. W. E., I will say that this is brought about simply by frequent checking of this important detail; and, as stated before, by having the flagmen as well as the conductors realize and agree that strict compliance with rule 99 is the thing required. My experience has been, so far as passenger flagmen on the Akron division of the Baltimore & Ohio are concerned, that we expect and do receive 100 per cent performance at all times. The public is not slow in perceiving when passenger trains are properly and efficiently protected.

C. P. ANGELL.



The Roundhouse. Climatic Conditions Makes Doors Unnecessary

Timber Construction Proves Most Economical

Southern Pacific Builds Roundhouse and Other Buildings of Wood After Careful Investigation

TIMBER FRAME BUILDINGS with corrugated metal roofing and siding comprise the most distinctive feature of the new engine terminal facilities of the Southern Pacific at Lafayette, La., this type of construction having been adopted after an exhaustive study of various types of

washing platform with hydrants and hot water connections and the necessary fuel oil and water standpipes.

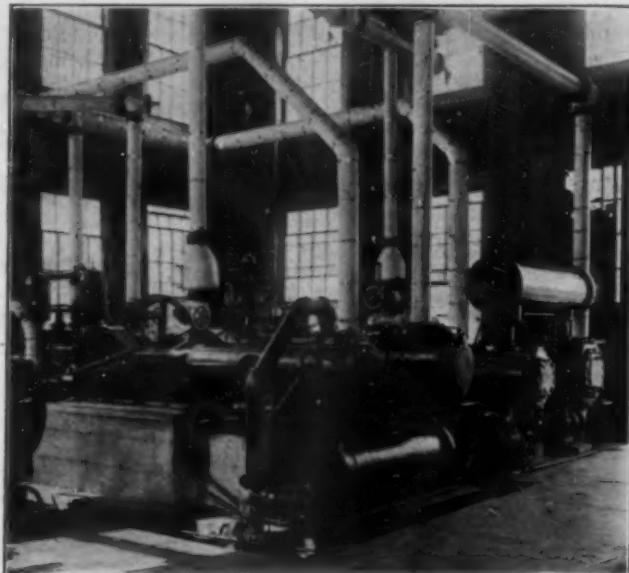
The repair shop facilities include an 80-ft. by 100-ft. machine shop, a 44-ft. by 300-ft. car repair shed with two tracks and served by a 24-ft. by 75-ft. woodworking mill, all adequately equipped with modern tools. Power is supplied by a 50-ft. by 60-ft. power house equipped with two 214-hp. horizontal water tube boilers with the necessary auxiliary equipment, a steam engine-driven generator, air compressors and the necessary pumps for water service, fire and boiler feed requirements. In addition to the necessary



A View of the Power Plant, Showing Insulated Overhead Piping and the Boiler Washing Plant

construction and a careful analysis of costs, due weight having been given to the local climatic conditions. Lafayette is at the end of the first engine district west of New Orleans, and is also the terminal point for important branches terminating at Alexandria and Baton Rouge.

The new facilities replace the buildings in an old terminal which have been in use for about 40 years, and were therefore in a seriously deteriorated condition and decidedly obsolescent. Reconstruction involved considerable enlargement, necessitating the acquisition of additional ground to meet the requirements of a modern terminal. The roundhouse is a 16-stall structure with 77-ft. engine pits, a drop pit and an oil sump and is served by an 80-ft. turntable. It is provided with a hot water boiler washing and filling plant, embracing a 65,000-gal. steel water tank and the necessary pumps and water and steam lines throughout the building. The approach tracks are equipped with a 180-ft. engine



Interior of the Power Plant, Showing the Air Compressors and Other Equipment

piping and service outlets, the water service installation includes a 24-ft. by 80-ft. steel standpipe of 270,000 gal. capacity. The installation also includes the usual auxiliary facilities such as sandhouse, oilhouse, necessary accommodations for roundhouse and engine service employees, etc.

The extension of the facilities necessitated a considerable

rearrangement of the track layout, including new car repair tracks affording standing space for 80 cars. Sanitation and drainage necessitated the construction of 2,400 lin. ft. of underground storm sewer and a 5-ft. by 12-ft. septic tank. The preparation of the site involved 75,000 cu. yd. of filling, special care being taken to insure adequate drainage. After leveling off the site the space between and around the buildings was dressed off and laid out with walks and roadways with considerable attention to the provision of grass plots in the unoccupied areas and the surfacing of other portions with oyster shells so that the entire terminal is given an unusually tidy and attractive appearance.

Types of Construction Carefully Analyzed

As mentioned above, the determination of the type of construction was preceded by a careful analysis and thorough



The Sand House and Engine Washing Platform with the Roundhouse in the Background

comparison of several types of construction, giving due consideration to relative economy, durability, fire hazard, insurance rates and local building ordinances. The type adopted comprises a heavy timber frame on concrete footings and

spaced at the greatest possible distance consistent with the strength of the roofing and siding. Thus, the metal roof is carried on timber purlins 12 in. deep, spaced 4 ft. 2 in. center to center, the thickness of these purlins ranging from

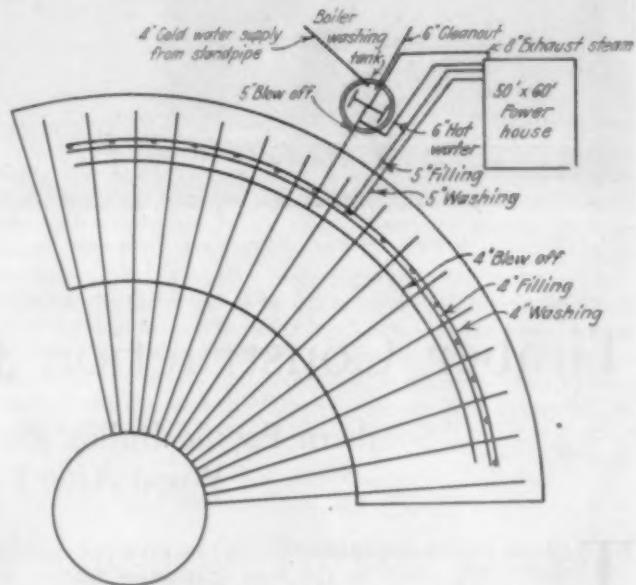
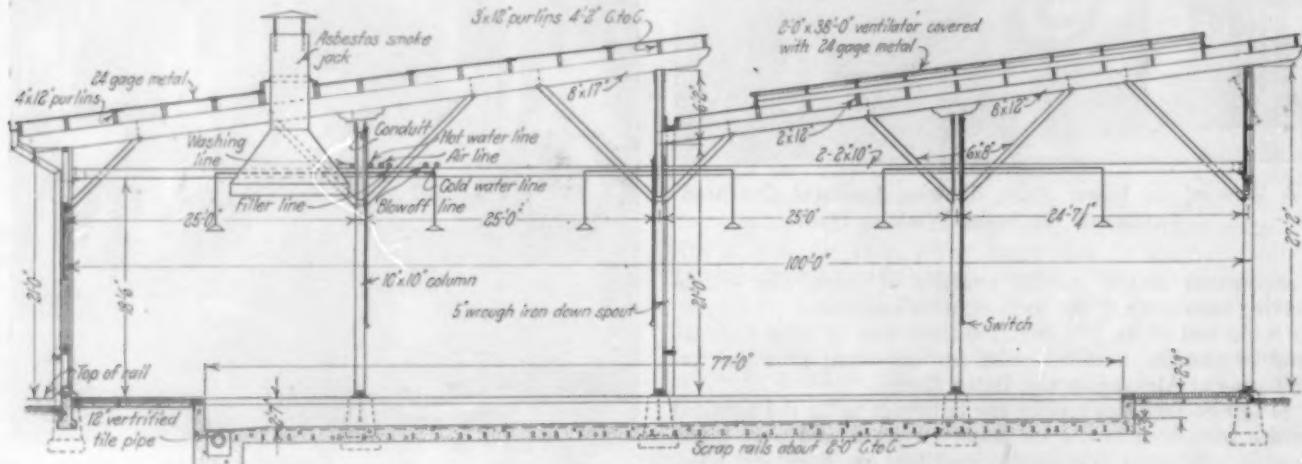


Diagram Plan of the Roundhouse Indicating the Piping for the Boiler Washing System

4 in. at the outer wall of the roundhouse where the span is the greatest to 2 in. at the inner wall. In general, the design may be said to comprise an adaptation of mill construction to the requirements of a roundhouse. The floor is of creosoted wood blocks laid on a concrete base.

This type of construction was subjected to a comparative cost analysis with two other types, with the following results:

Mill type with protected metal covering (as constructed)	
Original cost (not including floor and engine pits)	\$37,300
Life of 30 years for frame and 12 years for covering with allowance for repairs and insurance gave annual charge of	3,753



Longitudinal Section of a Typical Roundhouse Stall Showing the Timber Framing

floors, covered with Robertson Process Asbestos-Protected metal of 24 gage for the roofing and 26 gage for the siding. All gutters, downspouts, beadings and flashings are of the same material. The posts and girders are heavy timbers of first quality long leaf heart pine. The timber construction for the supports of the metal roofing and siding was designed with a view to the use of maximum size timbers,

Reinforced concrete roundhouse, same size:	
Original cost (Exclusive of floor and engine pits)	71,320
Useful life of 50 years with no allowance for repairs or insurance gave annual charge of	5,706
Brick roundhouse, approximately same first cost and annual charges as for reinforced concrete.	
Saving of about \$2,000 per annum in charges in favor of type adopted.	

It is the opinion of the officers of the Southern Pacific that the roundhouse as constructed will have a life considerably exceeding that assumed in the analysis, while the life of 50 years for the concrete and brick structures, although probably too low from the standpoint of their structural durability, is believed to represent the limits of their serviceability because other considerations are likely to render them obsolete within that period of time.

A careful study was made of power house equipment. It was deemed desirable to generate electric current for driving all individual machines in the machine shop, for welding purposes and for lighting the roundhouse, division offices, store and other buildings. It was also desirable to raise water from the well by air lift. For these reasons it was decided to provide for the generation of electric current by the installation of a 100-hp. Skinner unaflow condensing steam engine driving a 75-kw. generator and install two air compressors, one of 1,000 cu. ft. and one of 400 cu. ft. capacity, as well as the necessary pumps for water service.

The boiler furnaces are fired with fuel oil with an Empire oil meter installed in the fuel feed line which enables the plant engineer to observe the daily record of the fuel consumed. The value of this meter was demonstrated in carrying out a test on the effectiveness of insulation on the hot water and steam lines. This showed a reduction of 35 per cent in the fuel consumed to operate the plant under the same working conditions after the installation on all the

equipment, and the balance for grading, trackage, pipe lines and sewerage. The plans were prepared in the office of H. M. Lull, chief engineer of the Southern Pacific, Texas and Louisiana lines, Houston, Texas. The work was carried out by company forces under the direct supervision of J. A. Gorr, division engineer; A. B. Ashmore, supervisor of bridges and buildings, and W. D. Huff, supervisor of water service of the Lafayette division. We are indebted to Mr. Lull for the information presented above.

Supplemental Reports from the Bureau of Safety

THE INTERSTATE COMMERCE COMMISSION evidently has adopted a policy of more thorough inquiry into dangerous or improper practices in connection with train-running, as disclosed by its investigations of collisions and derailments; the first public result of the change is a supplemental report on a freight train derailment which occurred on the Atchison, Topeka & Santa Fe near Cajon, California, on July 15, 1923, and was reported on by the Bureau of Safety on August 31, 1923. This supplemental report, signed by W. P. Borland, director of the Bureau of Safety, and dated October 6, 1924, gives a summary of the



The Car Repair Shed with the Mill Building in the Background at the Left

piping had been installed. This reduction was effected during a period when the outside temperature was from 70 to 100 deg. F., from which it should be clear that much greater savings would be accomplished through the use of thorough insulation during periods of colder weather. Owing to the records kept by this meter the power plant operatives maintain a closer supervision of the plant operation and evidence a great deal of interest in fuel economy. Whenever the meter registers an increase in oil consumption immediate attention is given to dampers, soot, burners and all other factors affecting fuel consumption.

Economy of operation was also given attention in the design of other features of the terminal layout. The boiler washing plant has been designed to utilize not only the heat from the engine blowdown steam but also that from the exhaust steam of the power plant, compressors, pumps, etc. All steam and air lines are carried overhead. Complete insulation has been provided for both inside and outside steam and hot water lines. The engine pits are equipped with welding and lighting circuits and air and water outlets. The roundhouse is equipped with flood lighting and with individual stall lighting and independent switches. The total cost of the improvements in the engine terminal at Lafayette was \$425,000, of which about \$213,000 was for structures, \$135,000 for power plant and machine shop

findings of a year ago, and follows this with censure of the railroad company for having made only a part of the changes in practice which were then found to be necessary to bring air brake practice up to a safe standard.

Derailment at Cajon on the Santa Fe

The derailment occurred on a descending grade of three per cent, at a curve of six degrees, while the train was traveling at very high speed. The investigation showed that the inspection and tests of air brakes had not been sufficient to assure safe operation on steep grades. Conflicting evidence made it impossible to decide whether or not the engineman had manipulated the air brakes in a proper manner. The train, belonging to the Union Pacific, entered on the tracks of the Santa Fe at Barstow. Inspection and tests had been made at Yermo, on the Union Pacific, but at Barstow there was only a running inspection. The Barstow inspectors are required to give a written certificate to the conductor and the engineman, but the practice had developed of furnishing only one copy, and this was given to the engineman.

The train that was wrecked had been cut on three occasions, to pick up cars or to attach or detach a helper, but the brakes were not tested as they should have been.

The supplemental report says:

"Under bulletin No. 224, dated October 2, 1923, the rule

requiring inspectors to furnish conductors with an air-brake clearance card is to be enforced in future, conductors at the same time being instructed by this bulletin to see that they get a copy. A check made of the records for the month of July indicated that trains were in good condition leaving Barstow. It is also to be noted that under date of October 24, 1923, bulletin No. 239 was issued, requiring that the brake-pipe pressure on all freight trains running from Barstow to San Bernardino be increased from 80 lb. to 90 lb.

"There appears to have been no change in the method of handling trains with respect to the air brakes after their departure from Barstow. Cars are picked up and set out, helpers are cut in at Victorville and cut out at Summit, but the employees still are governed entirely by rule 876 (requiring only that the brakes be seen to apply on the rear car).

"While steps have been taken at least to provide for adequate inspection before departure from Barstow, if the rules are enforced, nothing has been done toward remedying the conditions existing west of that point. The necessity for proper inspection and test of air brakes is a matter of great importance, and has been pointed out again and again in various reports covering accident investigations. In mountainous sections of the country it is particularly necessary that every precaution be taken if trains are to be handled in safety. The accident at Cajon was destructive both in human life and in property, and it is difficult to understand why the officials of this railway are willing to continue taking chances with the operation of trains on such a heavy descending grade with no provision for knowing whether or not the air brakes are in working order and capable of controlling the speed of the train. With the continued use of such unsafe methods the hazard of another accident of this character is always present, and if it is the desire of the officials to operate trains on this grade in safety they should take prompt steps to correct the situation."

Derailment at Readville on the New Haven

The Bureau of Safety has issued a supplemental report, dated October 1, on the derailment at Readville, Mass., on September 11, 1923, which was reported in the *Railway Age* of November 24, 1923, page 957. In this case an eastbound passenger train, disregarding signals set against it and running through a No. 8 crossover at excessive speed was derailed, and the engineman and fireman were killed. An autopsy showed that the engineman had been suffering from an oedema of the brain, indicating that probably he had been suffering a temporary mental lapse and had not seen or comprehended the signal which was set against him. Excessive speed through short crossovers had been the subject of inquiry on the New Haven road in the years 1911 and 1912 so that the investigation of 1923 involved special inquiry into the use of short crossovers.

The supplemental report says:

"After the occurrence of the Westport accident (1912) instructions were issued requiring (on four-track lines) all trains having a schedule speed in excess of 15 miles an hour to stop before making cross-over movements, and towermen were directed not to set switches for the movement until the train had stopped: instructions were also issued to install No. 20 crossovers wherever practicable. No formal order was subsequently issued authorizing deviation from these instructions, but modifications were made from time to time in the order requiring the stopping of trains, this being for the purpose of making the requirements of the original order more in line with operating conditions.

"In 1914 a new rule was published in the rule book authorizing a speed of 15 miles an hour over routes governed by dwarf signals. Exceptions to this rule were published but did not cover the crossovers at Readville at the time of that accident, but from November 13, 1923, * * * the stop before crossing over was required at Readville except move-

ments to and from the Dedham branch or Midland division main tracks.

"Considerable progress was made in the work of installing longer crossovers after the occurrence of the Westport accident, and in a statement prepared by the general manager there are shown 17 points at which 46 No. 20 crossovers have been installed, 22 of which were new installations. There were also shown 19 points at which 28 No. 15 crossovers were installed, 13 of which were new. No. 20 crossovers are in use at the location of the Bridgeport accident, (1911) while the No. 10 crossovers at Westport have been abandoned and a new interlocking plant placed in service equipped with No. 20 crossovers. No changes have been made at Readville, except as regards the stopping of trains, previously mentioned; as to the question of installing longer crossovers at this point, however, information was received to the effect that it is the intention to extend the four-track system beyond Readville Transfer, in doing which it will be necessary to make changes in the interlocking plant at tower 181 and therefore it was not thought advisable to make extensive alterations at the present time and then have to make more changes at a later date.

"At the time of the investigation of the Readville accident it could not be ascertained that the engineman involved had been examined physically during the preceding 15 years; and 15 years ago his heart action, blood pressure, and kidneys must have been in proper condition or he would not have been approved for the insurance which the records show was granted.

"After the Readville accident an agreement was reached between the management and a committee representing the enginemans, effective March 1, 1924, providing for physical examinations of enginemans upon reaching the age of 55 years, and annually thereafter, these examinations to consist of blood pressure, heart action, and condition of lungs and kidneys; it was recommended that enginemans between the ages of 45 and 55 be examined every two years and every three years when under 45 years of age.

Conclusions. This investigation disclosed that the officials of the New York, New Haven & Hartford have taken steps toward complying with the recommendation in former reports concerning the use of longer crossovers between high-speed tracks; that they have adopted rules requiring trains to be brought to a stop before low-speed cross-over switches are lined for a diverging route, applicable to points where the trains involved ordinarily would be moving at high speed; and that they have reached an agreement with the enginemans providing for physical examinations.

"The subject of the physical examination of enginemans, except as applied to vision, color sense and hearing, is of substantially recent origin. But that it is of great importance is apparent from the fact that the physical condition of enginemans has been a factor in several recent accidents, while in many other instances the circumstances have been such that it has been impossible to determine why signal indications were disregarded by enginemans of long experience, who had good records and were considered to be among the best enginemans in service. The agreement now in force between the enginemans and the management of this railroad is a step in the right direction and should be of much value in assuring both employees and officials, as well as the traveling public, that the men charged with the duty of safely operating trains are physically capable of fulfilling their responsibilities."

THE EXTENSIVE EXHIBITS of railway equipment at Berlin-Seddin, Germany, instituted at the Railway Technical Congress held in Berlin the latter part of September, will be continued until October 19, according to a radiogram received by the *Railway Age* from the German Society of Engineers.

Railroad Ownership and Control by Employees

A Plan for Achieving Efficiency and "Industrial Democracy" Under Private Ownership

By Jean Paul Muller

LABOR can create enough "capital" to acquire financial ownership of our national railway system.

The combined human effort, comprehensively termed "labor," which is currently necessary, in close connection with the consumption of a vast mass of inert matter, commonly termed "material," to perform adequate transportation service from day to day, by means of a permanent plant of stations, connection tracks and vehicles first provided through invested capital has during recent years acquired an entirely new economic status.

Growing Disparity Between Wages and Capital's Earnings

This change has been brought about principally through the tremendous increases in wage-scales and resultant enormous increase in the total compensation paid to labor as compared with the total compensation accrued as earnings on invested capital.

Year ended Dec. 31	Total compensation paid to employees	Total compensation earned for capital	Excess labor over capital
1916.....	\$1,468,576,394	\$1,053,548,240	\$415,028,154
1917.....	1,738,482,142	996,336,044	742,146,098
1918.....	2,606,284,245	1,557,968,073	1,048,316,172
1919.....	2,828,014,440	1,396,681,308	1,431,533,132
1920.....	3,681,801,193	858,343,374	2,823,457,191
1921.....	2,765,236,353	768,975,794	1,996,260,559
1922.....	2,640,817,005	827,467,235	1,813,349,770
1923.....	3,004,071,882	1,026,043,845	1,978,028,037
(From Interstate Commerce Commission's Statistics of Railways in the U. S.)	<i>an increase of nearly 10%</i>	<i>an actual slight decrease</i>	<i>original spread increased five-fold</i>
Total for eight years.....	\$20,733,283,654	\$8,485,363,913	\$12,247,919,741

Capital can only be created through the successful human efforts to produce greater value in a given period than the same workers collectively consume. The value of the excess of production becomes capital in part (1) to be reserved for use in later years when the values produced by the combined efforts of the workers are less than the values required for their physical support (called "unappropriated surplus earnings" or "liquid surplus capital") and (2) to be converted into means of greater productivity of the workers, such as machinery, etc., called "invested capital".

The right of such invested capital to receive compensation is fundamental to our entire economic system, as otherwise there would be no incentive for the workers, individually or collectively, to produce more than they could consume from day to day, with resultant stagnation of all economic life.

Owners Formerly Had Too Large a Share—Workers Now Replacing Them

The present difficulties between "capital" and "labor" have their origin in the basic inequalities of the past adjustments in the division of surplus profits between the different classes of workers who produced the first surplus earnings in the early days of our present industrial system. The brain workers directing the collective efforts allotted to themselves a much greater share (mostly all) of the total surplus profits than was allotted by them to the manual workers in the group effort, in the form of daily wages. Rights to share in the capital created was not recognized by their fellow-workers who directed the enterprise and who called themselves "owners", because they re-invested such excess profits, produced by collective effort of all the workers, in their own names.

This, in the fewest words, describes the foundation of the

so-called "capitalist system" under which the world has developed from semi-barbarism to the present stage of individual well-being, which should be sufficient answer to those critics who declare it wrong fundamentally and who desire to destroy it altogether.

During more recent times the "owners" of invested capital have been compelled by self-interest and the effort of labor unions to recognize the right of labor to relatively greater shares in the current earnings, more and more; to such an extent that an ever increasing number of the army of workers in all ranks is able to accumulate individual surplus earnings and reinvest the same in part ownership of the plant in which the workers found steady employment.

The labor unions, originally born from the necessity to secure for the worker in the ranks a greater share of the profits created by collective efforts of all the workers than the directing "owners" were, without such coercion, willing to concede to their more humble co-workers, in the course of time lost sight of the fundamentals of the capitalist system which alone made their individual prosperity possible and directed their efforts toward securing for the mass of workers, by groups, ever higher and higher current wages regardless of the ultimate financial results produced by the combined efforts of all the workers. *This unsound economic movement is responsible for most of our present ills in the railroad transportation field.*

There is no longer any individual capitalist for the individual worker to fight! In fact most of our large transportation corporations are owned, fractionally, by many thousands of workers. The labor union, group by group, has gradually been substituted for the original owners in the effort to secure the greatest possible share of the gross earnings currently without regard of the ultimate net earnings remaining for the thousands of small owners.

No one seems to have realized that 10 per cent or 20 per cent of the total compensation to labor paid by the railroads of the United States annually, if set aside by all the workers themselves regularly, would in comparatively few years be sufficient to secure labor ownership and control of all the railroads in the country. Not only that but such an annual, regular saving by all the railroad workers would in the future supply the railroads with all the current capital increases required, year by year, to provide additions and improvements made necessary by the ever growing demands of industrial development.

"Plumb Plan" Would Perpetuate

Struggle Between Workers and Owners

The basic economic unsoundness of the so-called "Plumb Plan", extensively advocated by labor union interests during the past few years, consists of the disregard of the ownership relation and its attendant responsibilities. The advocates of the Plumb Plan recognize freely the necessity of supplying capital to acquire ownership control of the railroads; they would accomplish this, however, through a purchase in some form by capital supplied on the credit of the federal government. Strictly interpreted this means that they desire the ownership of this vital transportation plan to rest in all the people of the United States in direct proportion to the share each individual citizen bears in the plan of general taxation. The present relationship of the railroad worker would re-

main unchanged under this plan. He would still, individually or collectively, try to obtain in the shape of current compensation all he could squeeze out of his immediate superior who would naturally be influenced by the inevitable political pressure which the larger groups of workers would quickly find it possible and profitable to employ. Under such conditions it would be difficult to figure out how anything but deficits, or at best inadequate capital returns, could be expected, which, of course, would fall on the general taxpayer as an additional and entirely unnecessary burden. In other words, far from being a remedy for the railroads' present badly balanced economic conditions, it would further unbalance them.

Sound economics demand that the ownership be vested in those whose efforts produce the results. Any plan which proposes to divorce responsibilities must fail.

My many and varied experiences in this field during the past 25 years have crystallized into a concrete plan which at the very least should furnish a skeleton outline for use in developing, through further discussion, a sound and sane solution of permanent benefit to the worker, the security owner and, through the stability of operation conditions it would produce, to the economic life of the nation generally.

Practical Operation of the "Muller Plan"

(a) The board of directors of the railroad would appoint a provisional financial director to be placed in charge of the execution of the plan in detail.

(b) The financial director would secure the co-operation of the various groups of workers, either through their unions or as individual groups as may become advisable after the preliminary work has been completed.

(c) The workers, either as organized at present through their unions, or as organized for this specific purpose by the financial director, should elect delegates, one for each group on the basis outlined below, such delegates to form a board of managers for the "Employees' Railroad Purchase Fund" of which the financial director should be the chairman.

(d) The election of such delegates should be in direct ratio to the sum of the collective earnings of each group paid to them annually by the railroad.

(e) The employing railroad would, with the consent and approval of the board of managers of the employees' Railroad Purchase Fund deduct currently 10 per cent or 20 per cent from the payments to all groups joining in this plan and turn over the sum total so deducted on each pay day to the board of managers of the fund in a manner similar to that for years in vogue between the bituminous coal mine operators and the mine workers union in the collection of dues, known as the "check-off system".

(f) The board of managers of the employees' Railroad Purchase Fund would determine at monthly meetings what use should be made of the accumulated funds, i.e., what proportion should be invested in new issues of Railroad securities for current working capital, and what proportion should be invested in the acquisition of older evidences of ownership. (That would largely be determined by the state of the stock market from time to time.)

(g) The board of managers would receive proportionate recognition in the management of the railroad through the election to the railroad board of directors of representatives elected by the employees as the ratio of ownership of voting securities acquired by the Employees' Railroad Purchase Fund to the total volume of such securities issued and outstanding would justify.

Practical Results to Be Achieved by the "Muller Plan"

(1) The almost immediate change of the workers' mental attitude from that of a belligerent individual fighting to secure the greatest present personal benefit for himself regardless of future possibilities or the equities of his fellow workers

to that of an earnest, peaceful unit, striving in hearty co-operation with his fellow-workers and fellow-owners to produce the maximum results at minimum expenditures for the common benefit of all.

(2) The gradual and ultimately complete merging of the interests of capital and labor in the same group of individuals and the assumption by this group of the obligations as well as the rewards incident thereto.

(3) The automatic discontinuance of strikes and serious labor disturbances—as only the habitual and constitutional shirker will strike against himself and this element would promptly be eliminated by the workers themselves from motives of self-interest now entirely lacking.

Owners' Association

Defends Surcharge

WASHINGTON, D. C.

A N APPEAL to the Interstate Commerce Commission not to reduce the return which the railroads are receiving by removing the surcharge on Pullman tickets has been filed by J. D. Shatford on behalf of the Railroad Owners' Association, an organization of holders of railroad stocks.

"We appear as owners of railroads," he said. "There are approximately one million individual holders of railroad stocks in the United States, and our interest in this proceeding is paramount. The statement continues:

"I expressly refrain from a repetition of the evidence in the case, although we may ask permission to file a brief and submit argument before the commission. The evidence introduced by our managers and their counsel covers the situation and upon that we stand. It justifies, in my opinion, the position assumed by them. As your time is limited, I do not wish to lengthen these proceedings by unnecessary comment.

"But I do desire to present to you the thought that our organization has a capital interest in this proceeding, and that the members of our organization, being the actual owners of the roads, appeal to you to protect their savings, which they have invested in these properties, constructed and maintained for the public use and benefit.

"Of course, the only argument I wish to present is one based solely upon the merits of the controversy. Upon this point, we are convinced that the surcharge should not be removed. The surcharge taken away would reduce returns, which are now, in many instances, much below a fair rate. Its continuance is justified from every standpoint, and those who pay it can best afford to do so.

"If the transportation system were suddenly to be destroyed, trade would languish and die. Beyond all others, the American people have built their civilization upon their transportation system. More and more they are coming to realize that their happiness and prosperity are dependent upon the prosperity, progress and adequacy of their railroads; for railroads constitute their chief artery of transportation. America would never have been developed but for the creation of an adequate transportation system. Only by the development of the railroads could the people who now are asking the removal of this fair charge, known as the surcharge, successfully ply their vocation. If you remove this charge it will be necessary to find from forty to fifty millions in revenue from other sources to take its place. But where? If any faction desiring to lessen its cost in operating its business can come before this commission and secure relief, either through lower freight or passenger rates, it will be but a short time before the whole transportation system would be thrown into chaos, and the million or more citizens who have placed their savings in the stocks of these roads would be utterly ruined.

"If the Chicago, Milwaukee & St. Paul is successful in financing its maturity of forty-seven millions, due June 1, 1925, bearing 4 per cent interest, it will be necessary to advance this rate to invite subscription to a new issue. The amount of this advanced cost will approximate a million dollars per annum.

"This association is working to bring about a situation by which the government will reduce the existing rate from 6 per cent to cost, for advances made. If this is accomplished, we hope the reduction will care for the extra cost of new financing; but should this surcharge be removed, our efforts would be completely nullified, and another obstacle placed in the way of the successful handling of this financing.

"The patron of the Pullman sleeping car or parlor car, is one by his own choice; he desires the superior accommodations of the Pullman to the day coach, and is well able to pay for it. The surcharge is not resented by him, since the Pullman business has steadily increased from the time of the surcharge, indicating that it does not impede travel.

"The Pullman car is used largely as a hotel. Let us consider it in comparison with the cost of hotel accommodations and take the Washington-New York service as an example. The traveller uses the Pullman precisely as he would a

hotel at night, for which he pays, including the surcharge, the sum of three dollars and seventy-five cents for this duplicate of hotel accommodation. Were he to remain in either Washington or New York, he would pay a minimum of five dollars as his hotel for similar accommodation, yet would not enjoy the benefit of travel during the night. In other words, the petitioners would have us maintain moving hotels at half the rate charged by hotels in the cities which they visit. From any angle you may view it, the surcharge is but a small consideration for the luxury and convenience afforded. The evidence of the extra cost of producing this luxury and convenience, has all been covered by our managers and their counsel, so that we refrain from further allusion to the subject.

"We beg that you will consider this case from the standpoint of the necessities of our properties, and with an eye to their yielding a revenue consistent with that fair return provided for in the Transportation Act and guaranteed us under the Constitution, bearing in mind that the million owners of these roads consist largely of those who, in many cases, invested their all in them, and upon the assumption and in the faith that due protection would be given them by those charged with that solemn duty.

Four Great Eastern Systems Proposed to I. C. C.

Railway Executives Urge Larger Groups Than Nine Systems of Tentative Plan

A PLAN FOR GROUPING the eastern railroads (with the possible exception of the New England lines) into four great systems, each reaching Chicago, St. Louis and New York, instead of the nine systems outlined in the Interstate Commerce Commissions tentative consolidation plan, was submitted to members of the commission at an informal conference on October 11 by the executives of the four present systems which would constitute the main stems of the proposed groups, the New York Central, Pennsylvania, Baltimore & Ohio and the New York, Chicago & St. Louis. The plan as outlined is the result of several conferences that have been held during recent months by the eastern executives for the purpose of arriving at some suggestion to make to the commission as to modifications of its tentative plan, on which the commission is now working, which would remove some of the objections that have been made, and particularly as to the changes which would be necessary if the Van Sweringen merger is to become effective.

It was presented by P. E. Crowley, president, and George A. Harwood, vice-president, of the New York Central; Samuel Rea, president, and A. J. County, vice-president of the Pennsylvania; Daniel Willard, president, and J. J. Ekin, comptroller, of the Baltimore & Ohio; O. P. Van Sweringen, chairman, J. J. Bernet, president, and M. J. Van Sweringen, vice-president, of the New York, Chicago & St. Louis. The commissioners present were Chairman Hall and Commissioners Cox, Eastman and Lewis, the members of the commission who live in the East. While no announcement was made as to the matters discussed, it is understood that the plan was put forward in a general and tentative way as one which the big roads believe might be made effective by voluntary action, if the commission would approve it to the extent of revising its plan in accordance with the suggestions made, and thus accomplish results which there would be no power to force if the commission should promulgate a less acceptable plan. There was no representation of the smaller roads which it was proposed should be absorbed and there

WASHINGTON, D. C.

was not intended any definite commitment on the part of the roads. Also it is understood that the Pennsylvania is not yet entirely satisfied with it but was willing to join with the others in the informal discussion, to be followed by further consideration of details later if the commission is sufficiently interested.

The tentative plan put forward by the Interstate Commerce Commission on August 3, 1921, "in order to elicit a full record upon which the plan to be ultimately adopted can rest," groups the eastern lines into nine systems. The merger proposed by the Van Sweringens of the New York, Chicago & St. Louis; Erie; Chesapeake & Ohio and Hocking Valley, and the Pere Marquette would take out some of the principal lines used by the commission to build up its proposed System No. 4-Erie; System No. 5-Nickle Plate-Lehigh Valley; System No. 6-Pere Marquette; and System No. 8-Chesapeake & Ohio. While the details of the plan suggested by the eastern roads have not been made public it proposes to accept the Van Sweringen system as one of the groups to be reckoned with and divides the remaining roads between that system and the three largest systems proposed in the tentative plan of the commission—System No. 1-New York Central; System No. 2-Pennsylvania; and System No. 3-Baltimore & Ohio. No suggestions were made as to the New England roads but it was pointed out that they could be treated as a single system, as proposed for System No. 7 of the tentative plan, or made to fit in with the other proposed systems, as the commission may decide. It is proposed that the Norfolk & Western, which the tentative plan makes the nucleus of System No. 9, be added to the Pennsylvania system; that the Virginian, which the tentative plan includes in System No. 8 with the Chesapeake & Ohio, be included in the greater Nickle Plate system, as well as the Delaware, Lackawanna & Western, which the tentative plan groups with the Erie; that the Baltimore & Ohio take the Reading and Central of New Jersey, as proposed by the tentative plan, but that the New York Central, which opposed that plan, be

compensated in other ways, possibly by the Lehigh Valley, and also be allowed trackage rights over parts of the Reading and Jersey Central. The Lehigh & New England and the Lehigh & Hudson River were to be left as bridge lines to connect New England with the trunk lines, as proposed by Professor Ripley.

There is a growing feeling on the part of many who have been sufficiently interested in the progress of the consolidation idea to keep in close touch with the developments that the commission is not likely to hasten unduly the completion of its final consolidation plan, but that it is likely to welcome such voluntary combinations as it sees no objection to from the standpoint of public interest and to give its authority under the provision of the law which permits it to authorize acquisition of control of one line by another, short of technical consolidation, rather than to try to hurry out an artificial plan which it would have no way of making effective unless it were such as to appeal to those who must make the necessary trades to bring it into effect. There was a time when some of those keenly interested in consolidations were apprehensive lest the commission put out a plan too soon and thus tend to impede such negotiations as might be undertaken voluntarily. However, it is now rather evident that the magnitude of the task of formulating a complete plan is likely to hold it in abeyance for some time yet. The commission has already approved several acquisitions of control which are in the direction of consolidation as proposed by the tentative plan and if it should approve the Van Sweringen plan or the Missouri Pacific plan as it has already approved Southern Pacific control of the Central Pacific and El Paso & Southwestern, it would not only indicate a willingness to change the tentative plan in such a way as to make it more attractive but it would thus indicate a receptive attitude toward other voluntary plans.

In giving serious consideration to plans for consolidation and efforts to suggest improvements on the tentative plan, it is understood that the railway executives are complying with the wishes of the Republican administration as indicated on several occasions publicly by the late President Harding, by President Coolidge and Secretary Hoover, and by the Republican platform, and also perhaps expressed more directly to the railroad executives themselves. While the original tentative plan did not meet with any great general enthusiasm the administration has gradually increased its interest in the subject and Secretary Hoover and Senator Cummins devoted a great deal of thought to the drafting of a bill, later introduced by Senator Cummins, designed not only to offer some inducements to voluntary consolidations and place less dependence upon a plan to be made by the commission but also to hold forth a degree of pressure and compulsion if results were not forthcoming after a period of years. In view of the situation at the last session of Congress, in which the Republicans had not a dependable working majority, no efforts were made to press the Cummins bill, but in various ways the roads have been given to understand that the policy of the government favors consolidation and that if they will co-operate the result may be more satisfactory all around than if they should wait for the government to take most of the initiative.

President Coolidge Welcomes

Voluntary Consolidations

On the very day that the eastern executives were in Washington conferring with the commissioners President Coolidge took occasion to reiterate his approval of the consolidation idea in a radio address to employees of the H. J. Heinz Company, in which he outlined his views as to the relations between government and business. Declaring that the present policy is that "neither concentration nor competition shall be permitted to the extent of injuring the public interest" and that "whether a business unit is good or bad is to be deter-

mined not by its size but by its practices," he said that, carried to its logical conclusions, the government's policy calls for consolidation of the railroads.

Recalling that twenty years ago the government was using all its power to prevent railroad combinations for fear that they would be harmful to the public, he continued:

"So far has public policy now sung in the opposite direction, that today we have legislation which opens the way to this same sort of transportation combinations. But each plan, of course, is subject to government approval. It goes even farther. It contemplates compelling the consolidations, if they are not effected voluntarily. And there is gratifying indication that this new program is going to be accepted and put into effect without resort to compulsion."

"The change in policy toward consolidation of railroads is warranted by the change in policy toward operation. The government's power and its right to control and regulate the charges of public facilities is now fully recognized."

"Through the Interstate Commerce Commission the government determines and upon what terms securities of carrying corporations may be issued."

"Within the constitutional prohibition against confiscation, it fixes the rates, determines the income they may earn, and demands from them for railroad use and surplus beyond the fixed rate of legal return. The public demands service of the railroads, without confiscation, but at fair and reasonable rates fixed by the government."

"These are impressive accomplishments. They have been brought about chiefly because on both sides there was developed a new attitude toward all such problems. The men who have had to do with determining large business policies have come to recognize their obligations to the public interests."

"They have realized, too, that their success as administrators of great affairs closely depends upon their admitting the public's right to be served rather than to be exploited. In their new and more generous mood, they have placed a liberal translation upon this formula of the public's right."

"They have set up in their business organization, and agencies through which to learn what the public wants and how its wants may best be supplied. They have been prospered about in proportion as they have successfully appealed to the public along these lines."

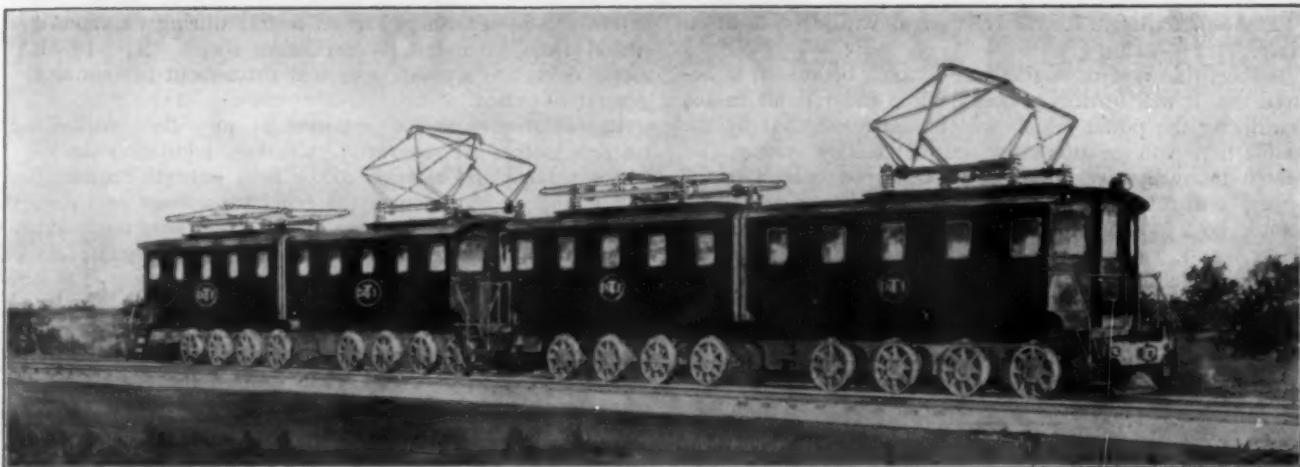
"There is one main motive that has dominated the development of this entire policy. It is the supremacy of the government. That government must be free and independent of outside and private influences. It must be the servant of the public welfare and the creation of an informed and seasoned public opinion."

"It cannot be dominated by any privilege; it cannot be subservient to any private advantage. It must always represent the public. Every effort in the past to bring about any other condition has ended in failure."

"The people of America have been and are determined to own and control exclusively their own government. As a preliminary to the maintenance of their supremacy over their government, they propose to keep the control and ownership of their own property."

"They know that when the government begins to own the property it begins to own the people. They want all these powers in their own hands."

THE UNITED STATES SUPREME COURT on October 13 refused to grant a writ of certiorari asked on behalf of striking employees of the Atchison, Topeka & Santa Fe who were convicted of criminal conspiracy in connection with the shop strike of 1922 when trains were tied up at Needles, Calif. The Circuit Court of Appeals, ninth circuit, whose decision the Supreme Court was asked to review, had held that all questions raised by the strikers had been presented to and considered by a jury.



How One of the Detroit & Ironton Locomotives Will Look When Completed

Electric Locomotives for the Detroit & Ironton

Direct Current Driving Motors Will Receive Power from
22,000-Volt Alternating Current Trolley

By Fred Allison, H. L. Maher and L. J. Hibbard,
Ford Motor Company and Westinghouse Electric & Manufacturing Co.

AN IMPORTANT development in the electrification of steam railroads is that recently announced for the Detroit & Ironton Railroad. As usual, Mr. Ford has not been restricted by past practice or tendencies in the choice of electrical system and of type of motive power units for his road.

The result has been the adoption of a trolley voltage of 22,000 volts, 25 cycles, alternating current, a trolley voltage twice as high as any previously used in this country. Also a type of motive power unit that is not only novel in electrical design, but embodies many new and important ideas in the mechanical design, has been adopted for this installation.

The mechanical parts for the new locomotives are being designed and built by the Ford Motor Company while the electrical equipment is being designed and built to Ford Motor Company specifications by the Westinghouse Electric & Manufacturing Company. The initial order calls for a locomotive comprising two motive power units operated in multiple.

The locomotive will develop a maximum of 5,000 hp. at 17 m.p.h. and will exert a maximum starting tractive force of 225,000 lb. on the basis of a 42,500 lb. axle loading with 33-1/3 per cent adhesion. The nominal rating of the locomotive will be 4,200 hp. It will also deliver 3,600 hp. continually at all speeds between 17 m.p.h. and 25 m.p.h. and will exert 54,000 lb. tractive force continuously when operating at 25 m.p.h.

Each motive power unit will be arranged for double-end operation so that an operating locomotive may consist of either one, two or more units as desired. It is estimated that each motive power unit will weigh 170 tons. All weight will be carried on the driving wheels.

The motive power unit selected for this electrification is of the motor-generator type. The principal reasons which have led to the adoption of this type can be summarized as follows:

1. Use of alternating current power supply for the trolley.
2. Direct current traction motors of the most rugged type

due to the opportunity to design the motor for its own best condition, regardless of voltages, line surges, etc. In other words the motors have the most rugged electrical characteristics and maximum space and weight efficiency that can be secured.

3. Possibilities for the simplification of the mechanical parts due to the high space and weight efficiency obtained in the traction motors.

4. Simplicity and flexibility of control.

5. Simplicity of regenerative system and ability to regenerate at any speed from the maximum to practically standstill.

6. Voltage control with consequent freedom from rheostatic losses, low accelerating peak loads, and ability to operate continuously at any desired speed.

7. Speed characteristics and ability of locomotive to adapt itself to all changes in the profile.

8. Constant horsepower characteristic enabling the locomotive to develop its full capacity under a variety of speed and tractive effort conditions.

9. Inherent voltage regulating effect of driving motor of locomotive motor-generator set with its attendant favorable effect on the distribution system.

10. Little tendency for driver wheels to start or continue slipping during accelerating periods because the voltage impressed across each traction motor, while the maximum starting tractive effort is being exerted, is low and does not increase if slipping starts.

11. Ability to maintain the a-c. power drawn by the locomotive at unity power factor and consequent tendency to low transmission losses.

12. Ability to operate at full load in the same train with any other type of alternating current locomotive.

13. Ability to operate as a constant speed type of locomotive on all applications where this feature is desirable by separately exciting the traction motors throughout the motoring period.

14. Large number of constant running speeds obtainable when motoring on separately excited connections.

15. Adaptability to locomotive designs with all weight on drivers.

In short this type of engine was adopted because it is believed that it will furnish a most flexible and reliable means of utilizing the power which will be delivered to it by the flexible high voltage alternating current trolley system.

Each motive power unit will be equipped with a transformer, a direct-current generator driven by a single-phase motor, eight axle-hung direct-current, series type traction motors, and suitable control and auxiliary apparatus. Single-phase alternating-current power at 22,000 volts will be collected from the overhead system by means of a pantograph and conducted through an oil circuit-breaker to the primary side of the transformer, where it will be stepped down to a suitable voltage for driving the motor-generator set. Direct-current power, which can be regulated from zero to 600 volts, will be delivered by the motor-generator set to the traction motors, connected permanently in parallel. The locomotive is designed for regenerative braking.

The locomotive transformer will be 2,000 kva., two-circuit, oil-insulated, air-cooled railway type unit. The primary winding may be connected to receive either 22,000 or 11,000-volt power. The secondary will deliver current at 1,250 volts.

The high voltage side of the transformer will be connected between the circuit-breaker and ground to series with two single-pole, double-throw knife switches in such a way that the transformer can be connected to operate on either 22,000 or 11,000 volts as desired by throwing the switches to the proper position. This feature has been included so that these locomotives can be operated over connecting 11,000 volt lines if desired at some future date.

The locomotive motor-generator set will consist of a 2,100-hp., 25-cycle, four-pole, single-phase motor, driving a 1,500-kw., 600-volt, 2,500-ampere generator at 750 r.p.m. The set will be a self-contained machine supported at three points and will comprise two bearing brackets with suitable bearings, motor stator, a generator field, and a shaft carrying the generator armature and the motor rotor. A 75 kw. 125-volt, direct-current "main exciter" will be mounted directly upon a shaft extension at the motor end of the set, while a 25 kw. direct-current "regenerative exciter" will be mounted directly upon a shaft extension at the other end.

The generator will be provided with series excited differential field, interpole field and compensating field as well as a separately excited field. The 75 kw. main exciter will be used to supply excitation to the motor field, the generator field, regenerative exciter field, and to supply power for all auxiliary motors, and for the control circuits. The 25 kw. regenerative exciter will be used to separately excite the traction motor fields during the regenerative period and during high speed motoring periods.

The locomotive traction motors will be 225-hp., 600-volt, direct-current series, axle-hung machines. Each motor will be flexibly connected to the driving axle by double gearing, that is, a gear at each side. A 22-tooth, $3\frac{1}{2}$ in. face, 3 dp., pinion, suitable for meshing with a corresponding 98-tooth gear will be mounted on a shaft extension at each end of the motor. The motors will be of a special mechanical construction for application to the mechanical parts being designed and built by Mr. Ford.

Each motive power unit will be equipped with double-end control. Forty-five normal running speeds will be available between standstill and maximum speed during both the motoring and regenerating periods. The locomotive speed during both the motoring and regenerating periods will be manually controlled from standstill to seventeen miles per hour by regulating the main generator voltage and from 17 m.p.h. to the maximum speed by regulating the main field strength of the traction motors.

The traction motors will be connected as series excited motors during the motoring period from standstill to 17

m.p.h. and as separately excited motors during the motoring period from 17 m.p.h. to maximum speed. The traction motor fields are separately excited throughout the entire regenerative period.

Regeneration may be obtained at any time while the traction motors are separately excited by regulating the generator voltage and traction motor field strength so that the motor voltage overbalances the generator voltage and causes the armature current to reverse. This will cause the traction motors to act as generators, driving the main generator as a motor which in turn drives the a-c. motor, causing it to become a generator and return power to the line.

A closed circuit type of transition will be utilized in going from the series excited to the separately excited connections of the traction motors and when desired the same type of transition may be used to change back to the series excited from the separately excited connections. Thus the separately excited connections may be completed while the traction motors are energized and working at full load, as series excited motors, without interrupting or appreciably changing the value of motoring tractive effort either during the change-over period or after the separately excited connections have been completed.

The closed circuit transitions can be utilized advantageously during the motoring period to change from the series connections to the traction motor fields to the separately excited connection when it is desired to increase the speed of the locomotive by weakening the field strength of the traction motors. It can also be used to complete the separately excited connections as the locomotive is motoring up to and going over the top of a grade so that the engine will automatically start to regenerate as the speed of the train begins to increase on the down grade.

Since the single-phase driving motor of the main motor-generator set, like the phase converter of the single phase three phase locomotive, is not self starting, the set will be started and partially accelerated up to speed from the d-c. end. A 60-cell, 125-volt storage battery will be provided on each unit for this purpose. This battery will be used further for energizing the control circuits and supplying power to the compressor motor whenever the motor-generator set is shut down. The motor-generator set will be accelerated to approximately 50 per cent speed by means of the main generator and from 50 per cent speed to full speed by means of the a-c. motor. Starting from rest with a full tonnage train the traction motors will be energized as series excited motors and the train may be accelerated up to a continuous full tractive effort running speed of approximately seventeen miles per hour by manually regulating the main generator voltage by means of the external field resistor and a set of 50-ampere, 125-volt switches.

If desired and the load and grade conditions are such as to permit the use of a higher running speed than is obtainable with the series connections, a closed circuit transition will be made from the series connection to the separately excited connection of the traction motors. The speed may then be increased by weakening the field strength of the traction motors. This will be accomplished by manually regulating the regenerative exciter voltage through an external field resistor and a set of 5-ampere 125-volt switches.

Then when the train passes over the crest of a hill and it is desired to maintain some constant speed while descending the grade, the traction motors will be made to act as generators by strengthening and properly regulating their fields.

When the train is to be brought to rest heavier regenerative braking may be utilized if desired in bringing the train to a very low speed before applying the air brake.

The speed may be decreased to approximately seventeen miles per hour by properly regulating the traction motor field strength while the speed may be decreased below seventeen miles per hour by regulating the generator voltage.

Study of Train Control Brought Up-to-Date

Years of Development Explained with Reasoning Leading to Adoption of Types Now Being Installed

THE SIGNAL SECTION of the American Railway Association devoted an entire day of its recent meeting at Swampscott, Mass., to the study of automatic train control. Papers describing tests and installations on eight different railroads were presented by the signal engineers of the respective roads and G. E. Ellis, secretary of the Train Control committee of the American Railway Association, presented a discussion of train accidents, showing the small proportion of these preventable by automatic ap-

paratus. In the account of the Signal section convention on page 547, of the *Railway Age* for September 27, these papers were of necessity reported very briefly. Therefore these papers, giving a more extensive history of the development, with some discussion of the studies made of this important subject, have been again taken up to be further dealt with. The first one, that by A. H. Rudd of the Pennsylvania was reported in the *Railway Age* of October 11; and four others are given in abstract herewith.

Development of the Ramp Type on the C. & O.

By B. T. Anderson

Superintendent of Signals, Chesapeake & Ohio

The history of automatic train control devices on the Chesapeake & Ohio goes back to June 26, 1915, when an investigation was made of a test of a train stop on the Seaboard Air Line. This test resulted in an installation on the Chesapeake & Ohio which was completed on March 27, 1916. Tests were made on a double track line in automatic signal territory at Poplar Springs, Va., with a descending grade of 0.4 per cent with six car passenger trains and 61 car freight trains and 100-car freight trains on the ascending grade. Tests were made with the throttle open and closed.

A further test was desired by the railway company and on May 15, 1917, seven miles of single track automatic train stop without wayside signals were placed in service in train order territory between Gordonsville, Va., and Lindsay. This early installation showed that the apparatus had many serious operating defects, that it was not reliable in operation and that trains could not be run safely with the train stop device without wayside signals. On account of the important traffic in this territory authority was given for an extension of 14 miles from Lindsay to Charlottesville, based on a redesign of the automatic train stop device and a complete automatic color light signal system. The 21 miles of single track signals and 38 engine equipments were placed in service on June 9, 1919.

Features of the First Installation

The engine equipment comprises two shoes, the right hand shoe giving the automatic stop indication and the left hand shoe giving the cab signal indication. There are 58 ramp rails, 40 ft. long, located opposite each other, $27\frac{1}{2}$ in. from the gage of rail and the top point 6 in. above the rail.

With a clear block a clear cab signal is received on the engine. With the block occupied, a caution signal is received at the caution signal in the rear, and a dark cab signal and an automatic stop are received at the red block signal. The train is then brought to a stop and the train stop device is reset by the engineman from the ground. The train can then proceed through the occupied block at any speed. The opposing signals were located 330 ft. apart and the ramps were located midway between the pair of signals. This spacing was made to permit a double header engine between the end of the ramp and the signal. A train passing a signal puts the signal red but the ramp rail is not de-energized until the engine shunts the track circuit in advance of the opposite signal.

Four signals are located at each passing siding. The

intermediate signals are about 6,000 ft. apart. Block and one-half overlaps are provided for braking distance. The grades on the 21 miles are short and easy except near Keswick and Charlottesville they are 1.17 per cent. The traffic amounts to about 40 trains per day, there being no heavy tonnage trains run in this territory.

On account of the numerous passing sidings there are a total of 54 high signals on the 21 miles. Eleven color light dwarf signals and ramps protect movements off the passing sidings onto the main line. In Charlottesville yard two dwarf signals are used as high signals where proper track centers could not be provided.

The increased protection and added facility obtained from the signal installation was quickly noted and plans were soon made for an extension of 40 miles from Charlottesville to Staunton.

New Features of the A. C. System

The alternating current color light signal system was placed in service on December 14, 1922 and the a. c. automatic train control device on January 16, 1924. This territory is in a mountainous region with several tunnels and with grades of 1.4 per cent. On account of the grades it is very desirable to have trains proceed past the automatic signals without stopping. A permissive feature was provided whereby the engineman could reduce the speed of the train to at least 12 miles per hour and operate a release while on the ramp and proceed by the signal without stopping in accordance with paragraph 2 (C) of the I. C. C. Order 13,413. In all cases of this kind up the grade a permissive signal indication was given. Down grade trains are required by rule to stop when the automatic signal is red, but this stop is not checked by the train control device.

The signals, relays and ramps are operated from a 6,600-volt, 3-phase, 60-cycle signal power line fed from Charlottesville and Staunton. The 114 ramps are placed in the rear and about 60 ft. from each signal. Intermediate ramps are located in between signals to provide braking distance. Single ramps are used to obtain both the automatic train control and the cab indication. This was accomplished by use of a provided ramp. In August, 1924, the cab indicator was discontinued and the two section of ramp bonded together into one 55 ft. length.

There are 89 high signals and 19 dwarf signals of the color light type in this territory. The automatic signals are located opposite each other except in special cases. Four

signals are used at each passing siding with intermediate signals. Signals are about 6,000 ft. apart with block and a half overlap.

The traffic is composed of local freight and through passenger trains and amounts to about 17 trains per day. Heavy tonnage trains are not run in this territory. There were 26 engines equipped with the train control device. All engines operating over this territory were equipped with a. c. and d. c. train control devices for operating between Staunton, Va., and Gordonsville.

In case an automatic stop application is received, it is necessary for the engineman to get on the ground and reset the apparatus after which he can proceed at speed through the block. The permissive feature on the signals on grades and at meeting points is obtained by displaying a yellow light below the red light when the block is occupied. This indicates to the engineman that he can proceed at slow speed prepared to stop short of a train or an obstruction. This feature is checked by the speed control feature on the engine which will not permit a speed greater than 12 miles per hour over a deenergized ramp rail. This feature has proved of great operating benefit on the grades and at meeting points in this territory. The speed control feature is not effective unless the engineman pulls a lever when passing the ramp. This is a positive check on the action of the engineman.

The engines on this territory are equipped with an emergency valve, located in the cab, whereby the engineer may obtain control of the air brake system in case the automatic stop application did not bring the train to a stop on a heavy descending grade. This release has been of value in several cases when unnecessary stops were made in tunnels.

Failure of Various Devices

Since May, 1917, until September 1, 1924, there have been approximately 3,239,963 ramp operations and 1,065 failures or about 3,042 operations per failure of the engine apparatus. On the d. c. territory there were 242 engine failures in the year ending March 1, 1924, and 139 in the year ending September 1, 1924. This drop in failures indicates the improvements in design and the results of better maintenance.

The engine failures have been due to loose and broken wires, crosses and grounds, battery failures, defective shoe mechanisms, shoes striking obstructions and shoes being broken off. The operations per failure per month in the past seven years varied around 1,000 to over 8,000 per month with an average of about 3,600 for the past year.

On the a. c. territory the results have not been quite as good. The operations per failure have been less than 700 in one month and the engine cutouts have been much higher than on the d. c. territory. These failures are being gradually reduced and it is expected that better reports will be made in succeeding months.

The operations per false clear failure per year have been low. The past year on the d. c. territory there were 168,705 operations per false clear on the train stop apparatus, while the a. c. territory has a much lower record. The false clear record should be nearer 4,000,000 operations per failure to agree with good signal practice.

The entire history of automatic train control on the Chesapeake & Ohio has been one of experiment and development. At the hearing held in Washington, March 20, 1922, evidence was presented showing that the operations per failure of the C. & O. train stop device varied from 896 to 967 for two months, while the signal operations per failure varied from 8,406 to 18,243. The train stop device has been greatly improved in the past two years until now the train stop device has an average number of operations per failure of 3,600 and the signals on the same division 35,000 operations per failure.

At the hearing in 1922 attention was called to 32 un-

desirable features on the C. & O. d. c. train control installation. All of the undesirable features have been corrected except eight and several of these are fundamental in principle and may apply to other types of train stop and train control devices.

Several failures occurred on the a. c. territory last winter due to trains being stopped in tunnels; the engineers had to use an emergency cock to release the brakes. The possibility of failures of this kind were referred to at the hearing in 1922. It is believed by our forces that such failures have been entirely eliminated as no record of such a failure has occurred in the last three months.

Several failures have occurred due to shoe mechanism striking rocks. This type of failure is more liable to occur in mountainous territory and presents one of the many clearance problems which must be met with in many types of train control.

Maintenance Organization

For the first few years the entire maintenance of the engine apparatus was under the supervision of a mechanic in the Charlottesville roundhouse. After the shop strike the failure record was very bad and in 1923 a supervisor of train control, under the direction of the mechanical department, was placed in charge of the maintenance of the engine train control apparatus. With the completion of the 40-mile extension to Staunton it became necessary to make repairs at the engine terminals at Clifton Forge and Richmond and an adequate force of mechanics has been placed at each point.

The wayside train control apparatus is maintained by the regular signal maintainers under the supervision of the signal supervisor. Since March, 1924, a signal inspector, trained in air brake work has been assigned, with the signal engineer, to assist the supervisor of train control in improving the maintenance records of the train control devices.

Reports of failures come to the signal and mechanical departments through the usual channels and on the forms used by each department. The mechanical department submits a monthly failure report to the signal department where the records are compiled.

By close co-operation, by the training of special men to handle the mechanical and signal phases of the automatic train control devices and by conferences with the manufacturer, the failure record is being gradually improved. Eight years' experience with automatic train control devices on the Chesapeake & Ohio proves that train control is in the development stage. A check of the improvements made in the past eight years and the list of improvements yet to be made is ample evidence of this.

It has been found that actual field conditions were very much different from those anticipated in the office. The problems of the 21 mile installation were simple compared to those on the 40 mile territory.

Effect on Track Capacity

The C. & O. has been very fortunate in having two types of train control installations in actual service under different operating conditions upon which the effect of train control on the track capacity could be ascertained. The d. c. territory is a busy single track line with about 40 trains per day with short grades while on the a. c. territory are found the usual mountain grades with about 17 trains per day. In neither installation heavy tonnage trains are operated. On the 21 mile d. c. installation the use of a simple train stop has not reduced the track capacity. By the introduction of automatic signals and the reduction in the number of train orders, train operation has been facilitated, safety of operation has been increased and economy of operation has resulted due to some telegraph offices being closed during certain periods of the day.

On the 40 mile a. c. installation the use of a simple train stop with a permissive release effective at a low speed of 12 miles per hour has not reduced the track capacity. The use of automatic signals has lessened the delays incident to train operation on single track, increased the safety of operation and permitted some telegraph offices to be closed during certain periods of the day.

There has been some inconvenience in having over a thousand stops due to failures of the automatic train control device, but even these delays on this territory have not reduced the track capacity. Such delays on our main line where 7,000 ton freight trains are handled or on a railroad such as the Hocking Valley, where the track capacity is limited, would seriously affect the safe and economical operation of the railroad.

It has been our experience on single track, and probably other railroads with the automatic train stop will also have the same experience, that delays will result at meeting points due to the fact that a train is holding the main line at the passing siding and the train making the meet cannot approach the siding without passing an automatic signal in the "Stop and Proceed" position and a stop ramp. In order to overcome this defect in the automatic train stop system, on the 40-mile a. c. territory, the signals as well as the automatic train control device were designed to keep the trains moving at slow speed approaching the meeting points. This change required a permissive signal at the sidings and on the grades and a permissive release operated by the engineman at a speed of 12 miles or less when passing over a stop ramp. This practice has been found to be very desirable in single track operation and worthy of further use in future changes and additions.

In our opinion the light traffic between Charlottesville and Clifton Forge, about 17 trains a day, where during certain periods of the night, trains are blocked for a distance of over twenty miles, would be an ideal location to install automatic train control without wayside signals. But the experience of the C. & O. between Gordonsville and Lindsay without signals indicated that the ramp system at that time had not been developed to such a point that it could be used safely without signals. Many operating and signal men are still of this opinion.

There are several advantages for installing an automatic train control system without signals. (A) The first cost would be less. (B) The cost of operation would be less. (C) The indication would be in the cab where it could be seen at all times, especially in foggy weather.

The adoption of an automatic train control system without wayside signals is dependent upon two most important features. (1) A reliable cab signal. (2) A reliable train control device.

Until a system is developed which can be safely and reliably used it appears necessary to base new installations upon the automatic signal system.

Safety of Operation

In the territory where the C. & O. has installed automatic train control an analysis of the accidents which have taken place in the last eight years discloses the fact that in no one

case has there been an accident which automatic signals could not have prevented.

Safety work on the C. & O. started January 1, 1913. During the years 1913-1923 inclusive, 81,815,959 passengers have been carried an average of 46.8 miles each, without a single one of them being killed in a train accident caused by negligence of any of the train employees. In addition, no passengers were killed in train accidents during 1912.

Interchangeability

At the present time all C. & O. engines are not interchangeable on the 61 mile train control territory. For this reason all engines cannot be run over the same territory. C. & O. trains run over the tracks of the Southern, the Richmond, Fredericksburg & Potomac, the Pennsylvania and the Washington Terminal between Orange, Va., and Washington, D. C. These engines are already equipped with an a. c. and d. c. ramp type of train control device. The Southern has adopted an intermittent induction device and the R. F. & P. a continuous induction device. Either a joint device interchangeable on these railroads must be used or a separate device for each railroad. This same problem occurs at many other parts of the railroad where joint track is used by other railroads. The railroads approaching Washington have appreciated this problem and as a result of a conference a committee was formed to keep in touch with the action taken on the several railroads.

While it is true that it may be some years before automatic train control may be used on joint tracks, yet it does seem advisable to adopt a system which can be made interchangeable on the various railroads. It seems entirely feasible in time to design certain ramp systems to work on the same wayside apparatus. The same may be true of other systems or a combination of the various systems.

Conclusions

The Chesapeake & Ohio has been a pioneer among the railroads in the development of automatic train stop and train control devices on single track. It has endeavored in every possible way to develop the ramp system of the one type into a workable system which could meet operating requirements on any railroad. It has spared neither time nor expense to accomplish this result. In spite of the record of eight years' endeavor it does not possess a system which is as reliable as the signal system. If it is given the time and chance it is entirely probable that a system will be developed, which will meet all requirements. There may be some devices with merit which are still in the experimental period. . . . On many railroads the accidents in train operation which can be prevented by a train control system can be greatly reduced by the use of a manual block system controlled by track circuits. On other railroads the installation of a proper automatic signal system will reduce the chances of failures and facilitate train operation.

On railroads of high class passenger traffic already equipped with an automatic signal system upon which accidents continually occur due to disregard of signals it is evident that some type of train control is the final way to correct the conditions only after all other available measures have failed.

The Miller Train Control on the C. & E. I.

By H. H. Orr

Signal Engineer, Chicago & Eastern Illinois

The development of the Miller train control system on the Chicago & Eastern Illinois began in 1911 with the application of this equipment to two locomotives, one passenger and one freight, and the installation of four

roadway ramps. That system was described by the Block Signal and Train Control Board as "A mechanical trip train control system, controlled electrically and operated in connection with fixed signals and the usual form of electric

track circuits, a ramp being located a short distance from the entrance of the block in position to engage a contact shoe on the engine."

From experimental service of this original installation an improved device was developed which, while embodying the same fundamental principles, was constructed so as to withstand engine vibration and so as to perform its operations more reliably and positively. The control valve and control slot magnet which had been carried in a separate housing were redesigned and mounted directly on the body of the engineman's running valve. The heavy engine shoe was replaced with a much lighter one having a removable wearing block and so designed as to be applicable to the tender or to engine. The control valve and engine shoe were held normally under air pressure to prevent vibration of parts and consequent wear. The control valve mounted on the engineman's brake valve and connected to the engine shoe by one air pipe and one wire, was substituted for the system of bell cranks and links by means of which the upward travel of the shoe on the ramp had been transmitted to the engineman's brake valve.

Improved Design in Service Since 1914

In 1913 and 1914 this improved equipment was applied to 85 locomotives, 47 passenger and 38 freight, and was put into regular service in the double track, automatic signal territory between Dolton, just south of Chicago, and Danville, Ill. Ramps were installed on the roadway, one braking distance back of each automatic signal, and connected into the signal system. This installation has been in operation since November, 1914.

An extended plunger in the control magnet permits the engineman to hold the magnet valve closed and forestall an automatic brake application while passing a ramp for a stop signal. This feature is now included in the "Specifications and Requirements for Automatic Train-Stop or Train-Control Devices" adopted by the Interstate Commerce Commission.

To meet the Commission's requirements that a train must be brought to a stop, once an automatic brake application has been started, a positive stop valve is now being applied to each locomotive. An automatic brake application opens

the air line from the train control unit to atmosphere through this positive stop valve and the valve remains open until reset by hand from the ground. A sealed cut-out valve is located in the cab to permit the engineman to cut the train control entirely out of service when necessary.

Maintenance Separated Between

Signal and Motive Power

All roadway train control equipment, including ramps, relays, batteries, circuit controllers, wire, etc., is maintained by the signal department, each maintainer having charge of this equipment in his assigned territory. Ramps are substantially constructed of standard T-iron and require but little attention. The relays, batteries, circuit controllers and housings, being of the designs ordinarily used in signal work, give the same service as this class of apparatus in automobile signal installation and require the same maintenance.

Train control apparatus on the locomotives is in charge of the maintenance of equipment department and under the direction of the superintendent of motive power. At the end of each trip the engineman includes the train control in his regular report made at the engine house. The locomotive inspector then makes his regular inspection of the engine and also examines and checks the train control and reports defects, if any, in his form report along with defects in other locomotive apparatus. The enginehouse foreman who receives these reports sees that all necessary repairs and adjustments are made and that train control is then tested and found to be in good condition. Short ramps are located on inbound and outbound tracks at engine terminals to permit running test of train control as the engines enter and leave.

While the performance of the train control locomotive equipment cannot be compared satisfactorily to that of an automatic block signal system, for the reason that the conditions of operation are entirely different, it may be said that the maintenance requirements of this equipment are in general the same as those of other locomotive appliances, such as air brakes, headlight machines, lubricators, etc., and it requires the same frequent and systematic inspections and tests as are usually necessary to keep apparatus of this character in operating condition when carried on locomotives.

The Regan System on 165 Miles

By Leroy Wyant

Signal Engineer, Chicago, Rock Island & Pacific

In the fall of 1919, at the instance of the Train Control Board of the Railroad Administration, the Rock Island authorized a test installation of the Regan Automatic Train Control on its double track main line between Chicago (Blue Island) and Joliet, on the Illinois division, a distance of 22.6 miles. This installation embraced 34 ramps and the equipment of 20 locomotives and was completed and placed in operation in the early part of 1920.

The Interstate Commerce Commission's general order No. 13,413 required that the Rock Island, among other roads, install train control over a complete passenger engine division, and, the experiences with the Regan device under test having been satisfactory, we adopted it for our complete installation, between Chicago (Blue Island) and Rock Island, on the Illinois division, a distance of 165 miles of double track main line. The roadway apparatus, embracing a total of 240 ramps, was completed and placed in full service in November, 1923. An appreciable number of locomotives had been equipped at that time and this number was consistently increased until the entire 102 involved were equipped and in operation by the end of March, 1924.

Description	FAILURES OF AUTOMATIC TRAIN CONTROL Months of December, 1923, to July, 1924, inclusive							
	Dec.	Jan.	Feb.	Mar.	April	May	June	July
Defects in ramp or their circuits	3	2	5	5	8	11	9	10
Improper operation by engineman	11	31	24	6	12	1	3	1
Shoe striking obstructions outside of train control zone	7	7	22	4	2	0	2	0
Shoe stems broken due to striking obstructions	3	4	5	5	1	0	0	4
Tampering	2	2	0	0	0	0	0	0
Miscellaneous improper maintenance and inspection, etc.	37	66	80	101	46	22	19	16
Interruptions at clear signals; cause not definitely determined	28	10	10	11	10	4	0	0
Defective materials	0	6	8	28	8	8	7	8
Causes unknown	0	0	0	0	14	0	0	0
Totals	91	128	154	160	101	46	40	39
Locomotives equipped	70	99	99	101	102	102	102	102
Locomotives in shop	9	7	9	6	5	4	3	3
Locomotives performing perfect operation during month	31	47	38	39	54	64	73	75
Locomotives having one or more interruptions during month	30	45	53	56	43	34	26	24

Failures and Improvements

I am attaching, as a part of this paper, a summary of the interruption reports as compiled by our supervisor of train control, for the months of December, 1923, to July, 1924, inclusive.

The train control apparatus now installed is, as regards basic operating principles, the same as that used in the test installation. The system was, however, expanded to include a low-speed circuit to restrict the movement of a train through a "stop" block, at a pre-determined speed, with the accompanying permissive feature which permits the passing of a "stop" signal, after acknowledgment by the engine crew, if below this predetermined speed, without application of brakes. Of course, some desirable modifications were made in the details of some of the apparatus.

Interchangeability

The development and application of a system which will permit the unrestricted operation of locomotives of any road over the tracks of any other road, which, of course, represents the goal toward which to work, appears to involve not only the process of elimination and consolidation of various possible train control devices over a rather long period of time, but also more uniform basic signaling and operating practices. The latter phase, operating practices, probably represents as large an economic problem as train control itself. In view of the complexity of the entire matter, I have

felt that it should not be given detailed consideration for some time yet. I desire to emphasize that the above refers to interchangeability for emergency detouring and similar purposes. It is an immediate concern when a device is to be selected for application to an established joint track zone, and we do not know now of any reason why the device which we have adopted could not be used for such a zone.

Effect on Track Capacity

With our present installation, we are safe in saying there is no decrease in track capacity. There may actually be an increase. Our ramps are located immediately in the rear of signals, which necessitates overlapping. At first, we anticipated some decrease of capacity due to this overlapping, but actual experience has developed that, except at a relatively few points where the overlap extends into a station where there is frequent switching, we are not slowing up traffic. On the other hand, we have found it practicable to discontinue stopping trains at automatic signals indicating "red" and this has facilitated traffic materially. This increase much more than offsets any decreased facility due to overlaps. Of course, we have not yet concluded our developments as regards possible siding ramps, and there is still some question as to the extent to which they, if finally installed, will affect track capacities. However, it is our desire to so handle this matter that we shall be able to avoid a decrease, and without very great additional expense.

Development and Tests on U. P. Lines

By A. H. McKeen,
System Signal Engineer, Union Pacific

In the development of automatic train control devices, the experience gained in the development of signal apparatus will be of immeasurable benefit, particularly as to roadside apparatus and circuits and to a considerable extent in the locomotive apparatus and circuits. In our opinion there will be no great difficulty in securing reliable operation of the component parts of automatic train control devices that are designed on correct signal principles. The problem beyond the relay on the locomotive will constitute the principal field for study and development.

In order to determine the device best suited to the conditions on our lines, tests were conducted with three different devices for a period of five months, from September 1, 1923, to February 1, 1924. The types of devices selected for tests were as follows: the intermittent electrical contact type (Miller), the intermittent inductive type (National), and the continuous inductive type (Union).

The test installations were made on nine miles of double main track equipped with automatic block signals spaced approximately one mile apart. Six miles of both main tracks was equipped with the continuous inductive system, embracing five blocks on each track. Adjacent to this installation, three miles on the westbound track was equipped with the intermittent inductive system, four signal locations being so equipped, the track magnets being located braking distance from the signals. The intermittent electrical contact device was installed on three miles of the eastbound track and consisted of three ramps, located braking distance from the signals.

An Atlantic type passenger locomotive was equipped with the apparatus of the three different train control systems and it was unnecessary to cut out or cut in the different devices on the locomotive in passing from the roadside installation of one type of device to the other. In this way continuous tests were made with each device functioning independent of the other.

For a period of three months, special test runs were made with the locomotive and two cars; from two to four round trips being made daily. Following these tests, the locomotive was used for a period of two months in double-heading freight and passenger trains in both directions over the test district daily. Observation of all tests were made and recorded. During the period of tests, failures from the following causes occurred:

INTERMITTENT ELECTRIC CONTACT TYPE

Storage battery on ramp exhausted.
Broken connection on ramp battery.
Sleet and ice on ramp rail. No electrical contact being made as shoe passed over ramp.
There were no false clear failures.

INTERMITTENT INDUCTIVE TYPE

Signalman reversed polarity of the track magnet battery.
Broken wire on track magnet battery.
Relay vibrating as train passed, opening the neutralizing circuit on magnet.
There were no false clear failures although two special tests were made, consisting of placing a number of tie plates and a piece of sheet iron on top of the track magnet housing, and in each case the train entered a stop block without receiving a stop indication.

CONTINUOUS INDUCTIVE TYPE

Cable wire maliciously cut.
Broken bond wires.
Defective grid leak.
Defective gasket in acknowledging valve.
Dirt in governor valve.
Dirt and oil in transfer valve.
Transfer valve frozen.
There were no false clear failures.

The ramp type device seems to offer the simplest method of transmitting an electric impulse from the roadway to the moving train. The circuits are simple and readily understood by any experienced signalman and this system has a longer record of actual use than any other system. The

operating problems involved in its use, however, appear to make such a device impracticable on our lines for the following reasons:

1. Its operation is liable to be seriously interfered with by extreme weather conditions.
2. The location of the ramp on the roadway will not permit of the operation of snow plows or flangers. The hood of a rotary snow plow extends six inches beyond and four and one-half inches below the top of the ramp rail.
3. Interference with tie renewals, ballasting and other maintenance of way work.
4. The location of ramps between tracks where switching is done, or in station platforms, constitutes a source of danger to trainmen and others.
5. If a shoe stem is bent or out of line so as not to engage the ramp, a false clear indication will result.
6. If a ramp is displaced or out of line, so that the shoe does not engage the ramp, a false clear indication will result.
7. If a train passes a clear ramp and subsequently stops at a station or for other reasons, and the block condition changed in the meantime to a restricted one, there would be an absence of any indication between ramps and a collision might occur before reaching the next ramp.

The intermittent inductive types offer fewer operating problems to overcome than the ramp type although there are disadvantages common to both. There are no clearance problems involved with the intermittent inductive type, although there would of necessity be some interference with tie renewals, ballasting and other maintenance of way work on account of the track magnets.

Suitable housing could no doubt be devised to protect the track magnets and a pronounced effort should be to accomplish this, otherwise there will be considerable liability of the magnet being displaced by dragging equipment. There is also a liability of the magnetic field of the track magnet becoming so weakened, after a number of years of service, that a false clear indication might result.

Train control devices of the intermittent type will necessarily operate at infrequent intervals and it is essential that they not become inoperative through disuse. The impracticability of testing out the locomotive apparatus with the roadway apparatus at any particular location is readily apparent.

Improvements of the Continuous System

There have been a number of changes in design of the continuous inductive type locomotive apparatus, with which our tests were conducted. The horizontal governor driven from the center of the pony truck axle has been replaced by a governor driven from an extended pony truck axle, which in addition to being a material improvement in design, is

located outside and is therefore more accessible for inspection. The governor valve group and the application valve group have also been improved to provide for greater facility in changing out the valves. A pressure reducing valve has been placed in the air line from the main reservoir to reduce the air pressure for the operation of all train control valves to 70 lb., which will minimize the effects of condensation in the valves and piping.

Interchangeability

The joint use of tracks by different railroads will bring about the ultimate and essential requirement of interchangeability. At the present time there have been installed or are being installed either for the purpose of test or as a complete engine division installation, three kinds of ramp devices, four kinds of intermittent inductive devices, and three kinds of continuous inductive devices.

No locomotives equipped with one type of device will function with the roadway apparatus of another type and none except the continuous inductive type will function with the roadway apparatus of the same type of another manufacturer. In the case of ramp types, little change other than in the location and length of the ramp would appear necessary to provide interchangeability. With the intermittent inductive types some track magnets are placed between the rails and some outside, and no two embody the same principles of impulse pick-up. One railroad with a test installation of the continuous inductive type is now operating, over this test district, locomotives equipped with the continuous inductive apparatus of two different companies, and there appears no reason why such systems now on the market cannot be made to operate interchangeably with little alteration.

Effect on Track Capacity

Automatic signals are spaced for minimum safe headway on comparatively few railroads, and it is not probable that maximum track capacity will be required on any considerable mileage of the roads to be equipped with automatic train control. The introduction of automatic train control on such railroads should not result in any appreciable limitation on track capacity.

On railroads that are signaled for maximum track capacity, the length of blocks in some cases being perhaps less than braking distance, a re-arrangement of signals on a longer block basis or the introduction of overlaps will be necessary. The effect of such re-arrangement will of course be to decrease the track capacity.

Other Train Control Papers Presented

The remaining papers together with that on train accidents by G. E. Ellis, are summarized as follows:

T. S. Stevens (A., T. & S. F.) read a brief paper on his experience in the installation of the Union Switch & Signal Company's three speed system on the double track main line between Corwith (Chicago), Ill. and Ft. Madison, Ia. The Santa Fe decided on an installation without wayside signals, except stop and stay signals at interlockings. The installation is designed to protect train movements against the normal direction of traffic—that is, in both directions on both tracks—the purpose being to secure the added track capacity in the near future by this method of train operation. If it had been known that the government would allow a flexible system with the permissive annulling feature, Mr. Stevens indicated that the Santa Fe might possibly have made a different decision. He expressed no doubt that automatic train control apparatus can be maintained and operated with a degree of efficiency equal to that now attained with automatic visual signals.

W. E. Boland (S. P.) was unable to attend the meeting and his paper was read by the secretary. A history of the tests and development of the National Safety Appliance Co.'s train control on the Southern Pacific was given. On account of the rather temporary nature of earlier installations the operation was not as reliable as the signal operation, however the newer apparatus is expected to be equally as reliable as the signaling. Under present conditions there is no appreciable effect on track capacity but with heavier traffic the train control should assist in increasing the track capacity. A new forestalling device has lately been added to the equipment. He stated that the National system is entirely workable and that it meets the requirements of the Southern Pacific.

H. S. Balliet (N. Y. C.) read a history of the experiments with the intermittent inductive train control of the Sprague Safety Control and Signal Company, which were carried out on the electrified zone of the New York Central in 1922 and 1923. This installation was made on about

six miles of the main track No. 2 between Ossining and Tarrytown covering five automatic signal locations.

Extensive tests were carried on from May 8, 1922, until January 31, 1923, under the auspices of the Joint Committee on Automatic Train Control of the A. R. A. and the Interstate Commerce Commission. Official running tests extended from December 6, 1922, to January 31, 1923, during which time the one locomotive equipped made 145 trips covering a mileage of 638 miles and encountered 725 tests. Of the 2,176 operation at track magnets, there were 2,174 proper operations, 1 safe failure and 1 false clear, the latter being caused by extreme test conditions not encountered on a regular installation properly installed. Full and complete details of these tests were given in the report of the Interstate Commerce Commission which was abstracted on page 399 of the *Railway Age* for September 1, 1923.

G. E. Ellis secretary of the Train Control Committee of the American Railway Association delivered a paper, which embodies his own personal studies of train accident reports. A special analysis was given of the accidents for the 3½ years ending June 30, 1921, in which the head-on and rear collisions were separated. The location and circumstances of these collisions were analyzed further as to the signaling of the lines concerned, train movements against current of traffic, etc. The conclusion was that the accidents preventable by train control were such a small percentage of the total that expenditure for train control was entirely unjustified on the basis of accidents prevented.

Agricultural Development Work Earns Revenue

THE AGRICULTURAL development work which the Baltimore & Ohio is conducting in those states traversed by its system includes practical projects which not only add to the revenue for the road but also develop an attitude of friendliness for the railroad in agricultural sections. Among the plans which the agricultural department has been carrying out during the past few years are the Indiana



Section of B. & O. Potato Club's Exhibit at Fourth Annual Indiana Potato Show in January, 1924

certified seed potato project, the importation of hundreds of carloads of feeder cattle from the west to eastern feeding lots, the replacing of scrub with pure bred bulls by the Baltimore & Ohio better dairy sire special, the testing of soil samples from more than 4,000 Maryland and West Virginia farms and the distribution of over 60 carloads of free liming material, and the standardization of farm poultry in Illinois and Maryland, through the distribution of setting eggs to Baltimore & Ohio poultry clubs.

To counteract the established belief in Indiana, that the average potato yield of 75 to 100 bushels per acre cannot be

increased, the Baltimore & Ohio, under the direction of O. Kenneth Quivey, general agricultural agent, recommended the introduction of certified seed potatoes or healthy seed potatoes guaranteed free from disease. This idea was promoted by the formation of a Baltimore & Ohio potato club in each of 20 Indiana counties. Each club consisted of 10 members. The project provided that the railroad would give to each club member enough certified seed potatoes to plant a quarter acre, the club member in turn agreeing to plant potatoes according to instructions given by the agricultural extension service of Purdue University and under the supervision of the county agricultural agent.

In the late summer and early fall a series of county potato



B. & O. State Poultry Show Held at Taylorville, Ill.

shows was held to permit the club members to exhibit their potatoes in friendly competition with each other and to win cash prizes offered at each of the county shows by the Baltimore & Ohio. The winner at each county show was required to enter his exhibit at the Indiana Annual Potato Show, where a series of prizes was offered by the road.

The efforts of the Baltimore & Ohio resulted in an average yield per acre of 200 bushels as compared with the former average yield of 75 to 100 bushels per acre. A total of 11,780 bushels of potatoes were produced by 250 Baltimore & Ohio potato club members at a total cost of \$3,752 and an estimated sale price of \$13,532, showing a net profit of \$9,960 on a total of 62½ acres of ground. The highest individual yield of 416 bushels per acre was secured at Auburn, Ind. A member at New Albany, Ind., produced a peck of high quality potatoes which won in competition with hundreds of others in the potato club, the commercial growers' and in the farmers' classes.

The Baltimore & Ohio organized a Baltimore & Ohio Poultry Club in each of the 14 southern Illinois counties traversed by its lines and gave to each of its 420 poultry club members a basket of 50 high quality setting eggs purchased by the railroad from the most reputable breeders of standard bred poultry. The formation of the poultry clubs was fostered by the University of Illinois and was carried out by the Baltimore & Ohio in the desire to improve the quality of the average farm flock. Club members are required to exhibit their best poultry in friendly competition with each other at a series of county poultry shows conducted by the Baltimore & Ohio. The winners at the county shows are required to exhibit at the Baltimore & Ohio state poultry show which has been held each year during Thanksgiving week at some town on its line in southern Illinois.

The poultry raised by Baltimore & Ohio poultry club members from the egg settings furnished them by the railroad have not only won repeatedly in the local county fairs but have also won prizes at the Illinois State Fair.

Government Ownership Principle Not American*

"A Question that Challenges Our Whole Scheme of Government" and Threatens Liberties of People

By Hale Holden,

President, Chicago, Burlington & Quincy Railroad

WE ARE MEETING TONIGHT in the beautiful capital city of your magnificent state, transformed in the span of life of men now living, from a prairie wilderness to a great empire. Not to speak of your cities, proud of their schools, churches, libraries and homes and their prosperous factories and mercantile establishments, there are today 125,000 productive farms in Nebraska. They must be productive to show a corn crop of over two hundred million bushels worth \$1.00 per bushel to the farmer, and a wheat crop of over fifty million bushels, worth \$1.10 per bushel and going to market at the rate of a million dollars a day, and if you add the value of all their products, it is said they will easily reach the huge total of seven hundred and fifty million dollars taken out of the ground in this year, 1924.

This is wealth; it is productive wealth; it is not like the working of the mine which exhausts itself as it produces, but is a permanent creation and addition to the resources of mankind. It is wealth that in a single year has been taken from the same Nebraska soil that before the coming of the railroad was described as sand hills unfit for cultivation or for human habitation, and that in the years to come will continue to produce in even greater abundance.

Now what power, what agency, has done most to enable industrious and intelligent farmers to produce such stupendous results in making desert places blossom as the rose? The influence of the reaper and other labor-saving devices have done much for the farmer, but all other agencies combined have not done as much as the building of railroads, for without railroads there would have been no markets, and without markets, products of the soil have little value.

These railroads, up to this time, so far as the investor and his risk are concerned, have been enterprises in which men and women have placed their savings in precisely the same sense as the farmer has purchased land, the merchant has opened his store and the manufacturer has built his factory. Farmer, merchant, factory owner and railroad stockholder alike have invested their money voluntarily in enterprises where there was the risk of loss, in the hope of profit, and relying upon the equal protection that is guaranteed by the laws of the country. This is the economic system under which twenty billion dollars have been invested in the railroads of this country.

It has been a beneficent system and part and parcel of the economic system to which President Coolidge alluded and which he defended in his recent address on Labor Day, and in which he said:

"We have in these United States not only the best paid workers in the world, but the best paid workers that ever lived in this world."

He calls it the American policy, which is working out, he says:

"With a success more complete for humanity than was ever before accomplished anywhere else."

The American way is the way of voluntary co-operation—with free people working together, with a civilization that is based on liberty for and protection of private initiative and

enterprise, advancing steadily, through contrast with old world systems based on paternalism and bureaucracy.

In the declaration of principles set forth in your constitution and by-laws, I find similar views expressing your sentiments towards the Company and its policies, and in which you pledge the members:

"To teach and to practice loyalty, fidelity and patriotism in the administration of the Company's business, wherever we may be,"

and "To promote such measures as are conducive to the general good of our Company, our country and our homes."

We join together our country, our homes and our railroad company as a common cause to work for, which is the American spirit and policy to which President Coolidge refers.

This has, it seems to me, an especial significance to men whose best years are spent in the service of the railroad company, and who can see in retrospect how closely their interests as railroad workers are bound up in the interests of home and country. Working for the railroad company has been your daily occupation and pleasure, as you have been each day also working for your homes. In many cases a large motive has been the securing of a home, and as one may see his home improved each year and may take pride in every new convenience and may rejoice in the growth and prosperity of his country, so may he naturally take pride in the growth and improvement of the railroad he is working for.

Now, my fellow employes, as these sentiments of good will are the sentiments that really animate us, and as we appreciate the development of our country and of its resources under this American system of individual enterprise, in conditions of freedom, and as we count the blessings of the American citizen that have been realized under that system, we stand, if we are true Americans, in a spirit of reverence before the institutions which we have founded and, if we are true Americans, with an invincible determination that these institutions shall not be undermined nor destroyed.

These are trying times, made so mainly by impatience under the restraint of conditions thrown about us as a result of the World War. We went to war for a great principle and nobly sustained our share of the common burden and were given our full share of the glory in what was accomplished. Peace was declared, but there has been no peace; battle and bloodshed came to an end, but the great forces set in motion have continued to exert their pressure upon all of the peoples of the world and we have not escaped the heavy burden of our full share. History shows that after great convulsions of this character, years of patient effort, sacrifice and self-denial follow, in the paying of the price that war entails and this price is levied on all alike. The paying of it tries the mettle of the spirits of men and women and out of the long continued pressure is born the impatience and rebellion which searches for new remedies and patent expedients. The leaders who thrive on this discontent are the preachers of radical doctrines and the proponents of plausible but untried and unsound remedies for the discontent that is prevalent throughout the land. These are the times when

*Abstract of an address delivered at annual banquet of the Veterans' Association of the Burlington at Lincoln, Neb., on October 6, 1924.

the American spirit, which had its beginning at Bunker Hill, arouses and asserts itself with the grim determination that the things that were fought for in the making of this country are infinitely more vital and important to fight for today than ever before, and will be defended and preserved with the same spirit of devotion and self-sacrifice that was thrown into the balance in winning the freedom of our institutions in those early days.

We are in the midst of a crisis of radicalism and the demagogue is abroad in the country preaching gospels of discontent with our conditions and destruction to our institutions. These people, by cunning misrepresentation and deceptive array of facts and figures, are preying upon the prejudices of the people and are expounding false doctrines and promoting quack remedies for the simple ills that pervade the times; they are simple ills and need but simple remedies, patience, industry, determination and a cool head to surmount them.

Regardless of political party, we will not, in this generation any more than we have in earlier times of trouble, surrender any single one of the great principles which underlie our American form of government, and upon which the freedom and liberties of American citizenship rest. We have not failed to note, as a part of the radical propaganda of the times, the specious argument that government ownership of the railroads is one of the great measures of relief that the country needs, and that under it we shall have better service, lower rates and higher wages. We that live with and operate the railroads have walked with this shadow beside us all of our lives, and probably it will be with those who come after us; but nevertheless in this day and generation, and in spite of the troubous conditions to which I have referred, I believe that there is less reason to expect that the government of the United States will take over and undertake the operation of the railroads of the country than perhaps at any time since the railroads began to operate. My principal reason for making this assertion is that I believe the American people today understand more clearly the so-called railroad question than ever before, have more faith and belief in the upright purposes and spirit that animate the operators of American railroads, whether they be employes or officers, and have a settled determination to preserve the principles that underlie the private operation of these great arteries of transportation.

Government Ownership Promoted by Ambitious Politicians

As we count the blessings of the American people, that have been realized under the American policy to which President Coolidge referred, we cannot contemplate the substitution of a bureaucratic system which certain ambitious politicians are advocating throughout the country as government ownership, and we cannot refrain from discussing the matter, because present-day conditions have again made it important and because of its significance to people in all occupations and in all walks of life.

The question of government ownership is a question more important than rates that are paid for the service or wages that are earned in the service—it is not at all the question that confronted the nation when at war, but it is a nationwide question in time of peace that challenges our whole scheme of government, which rests on the consent of the governed and reserves to the people for their own free exercise, all rights not expressly delegated to the Government.

In a secondary way, it is a financial question, but of such vast proportions as to threaten the solvency and credit of the nation.

Senator Cummins of Iowa told an audience in Des Moines recently that this country is now twenty-three billion dollars in debt, and that to purchase the railroads would make the debt forty-three billions, and that as Government property

is not subject to taxation, there would follow a loss in tax revenues of three hundred and thirty-six million dollars a year, which the railroads alone are now paying in taxes. He predicted that Government ownership of the railroads would increase the burden of taxation upon the people at least twenty-five per cent.

Probable Effect on Taxation

Let us test this statement by some Nebraska figures. The total tax bill in Nebraska is about sixty million dollars per annum and the railroads are now paying five millions of it. The school taxes amount to twenty-four millions, and the railroads pay two millions three hundred thousand dollars of that particular tax. There are small school districts on our lines west where the Burlington Company pays seventy per cent of the school taxes. In Hooker county the total school tax is about \$50,000, and this company pays \$11,400 of it; in Keith county the school taxes amount to \$154,000, and the Union Pacific Railroad pays \$58,000 of that; in Thomas county this company pays forty-seven per cent of all the taxes, and out of a school tax of \$48,700 we pay \$15,600.

It seems very evident that if government ownership has the effect of depriving communities of the taxes they are now collecting from the railroads, either the public schools in many districts must be closed, or the farmers must be subjected to an increased taxation that is virtually prohibitive.

The consequences of government ownership would be felt least of all by the owners of the railroads, because they would be paid for them either in cash or in obligations of the government; few owners of railroad stocks or bonds would object to government ownership, except as their alarm for the future welfare of the country would lead them, as good citizens, to oppose it. The question, however, is not what railroad stockholders want, but what is best for the people at large. If we assume that the people are willing to double the present huge national debt and to increase their taxes twenty-five per cent for the pleasure of owning the railroads, then what? With this loss of taxes, and this increase in the public burdens, the certain result would be lower wages and higher rates, because the people at large will never be willing to submit to further increased taxation for the benefit of a special class consisting only of railroad employes and patrons.

There is another consideration which we should constantly keep in mind: In a republic like ours, governed by universal suffrage, politics and political influences would inevitably be felt under government ownership of the railroads. There was a striking illustration of this in January, 1919, when the railroads were in the hands of the Government. The Railroad Administration asked for an appropriation of seven hundred and fifty million dollars, which was urgently needed; it failed of passage in the Senate because of a political filibuster, and the payment of bills had to be postponed with much inconvenience.

We all know what happens now with the River and Harbor Bill, which is called a "pork barrel" measure because of the clamorous demands of interested sections of the country for appropriations. The same conditions are bound to arise under government administration of the railroads, only much worse, because all sections of the country will be involved.

It is only human nature that senators and representatives will be under pressure from their constituents to secure more railroads, more repairs, more improvements and better service for their localities, with the result that the sections of the country represented by the most influential politicians will be taken care of, while railroads in other sections will be allowed to run down.

The greatest interest which the public have in the railroads is in good service, and they know that in this country they are now receiving good railroad service. But the fact is undeniable and has been demonstrated in every civilized coun-

try on earth that public ownership and political management of any business tends to inefficiency and poor service. It stands to reason that where there is an unlimited public treasury to draw upon for deficits, there never will be the incentive on the part of officials and employees to practice care in the use of materials and in securing the best results that prevails where success absolutely depends upon keeping expenses within the revenues.

Many labor leaders before the war went upon record as opposed to government ownership and management of the railroads. They called it "goose step" management, because of the rigid semi-military discipline with low wages on German government-owned railways. One of them said in a public address in 1911:

"American railroads are the best managed of any in the world. The men in charge of these great systems stand head and shoulders above the railroad men of the world. There is no other class of business where the details are watched so closely as on the average railroad."

This is probably the opinion of the better class of labor leaders today, but certain experiences of a political nature during the federal administration of the roads seem to have turned the heads of others, and they are now pointing their followers to the increases in wages and increases in their own influence during that war period as reasons for desiring a return to those conditions.

Their expectations can never be realized. If the people should ever consent to burden themselves by a purchase of the railroads, there is hardly a remote possibility of a return to war conditions such as these men anticipate. No one in this country understands this situation better than Walker D. Hines, who was Director General of Railroads during the period of federal control, and expressed his view at length in a recent address to railway employes at Minneapolis, which every railroad man ought to read. Mr. Hines said that if the government should buy the railroads the railroad operation would be in charge of some Cabinet officer or special bureau, and we all know how "passing the buck" has become a fine art in Washington. The long effort of the mail carriers to get their small pay increased is an illustration.

The postmaster general could not raise their wages until Congress authorized him, and when Congress did finally give the authority, the president vetoed it because there was no money available; so that the mail carriers, after waiting for years, are still without their increase of pay.

Not long ago Hon. James C. Davis, now engaged as Director General of Railroads in winding up the affairs of the United States Railroad Administration, said in a public address:

"If the railroad ownership and operation is thrown into the maelstrom of politics, competition, especially in the way of good service, ceases; the incentive in the way of personal endeavor to succeed is gone; promotion in service would depend upon political pull, rather than faithful performance of duties and controlling ability; wages and hours of service would be determined by resolutions in conventions, political or otherwise; extensions and capital investments would depend upon Congressional action rather than commercial necessity, and the greatest and most efficient transportation system in the world would be deprived of that irresistible and invincible desire to succeed, born of personal ambition, which is always present in private enterprise, and wholly wanting in the ordinary routine of government service.

"No greater mistake, in my judgment, could be made, nor a more expensive experiment be undertaken, than to have the government permanently take over and operate the great railroad systems of this country."

But as I have stated, the people of this country will not voluntarily take this step. The arguments that may urge it are specious and false and those who advocate them fail or refuse to answer the searching questions that are put to them. They promise, when every precedent in this and other countries proves that these promises will not and cannot be performed; they blandly ignore the veritable statistics proving the lower wages and less favorable working conditions for employes, the higher charges and, nevertheless, the appalling deficits which the public has to bear, and the inferior service that government operated railroads, with rare exceptions, are known to provide.

Finally, they can point to no precedents of value to support the argument here, because no parallel can be found to the problem of rendering service to a country of such vast proportions, involving so huge an establishment in men, money and materials as government operation would present in this country.

In some countries, as in Canada in recent years, government ownership and operation has been forced upon the people because conditions had broken private operation down and the government was compelled to step in to save the service. In my opinion, that is the only way in which government operation can come about in this country and unless our railroads are given fair treatment and our adopted scheme of regulation is preserved from the meddling of political blocs, we may yet see the investor on strike and the management so restricted that the government will have to assume the burden.

There is every reason why this should not be allowed to happen. We are not a people that by birth or by training are inclined to work out our lives in the dull routine of government service, nor will we ever take kindly to the petty tyranny of a vast government establishment. We sometimes like to run for office and enjoy the honors and emoluments of political position, but to live under the restraints and to endure the pressure of a nation-wide bureaucracy administering our daily and hourly needs for transportation, is foreign to our concept of American freedom and is something that I believe the American citizen will not endure.

The American spirit still lives in the hearts of the great majority of the people and as often before, slow to action, but certain in action when aroused, this spirit is stirring the consciences of the people into action to again defend the Constitution, the integrity of the courts and the freedom of our institutions from attack.

The President said in his recent address:

"The people do not propose again to entrust their government to others, but to retain it under their own control,"

and again:

"If the people lose control of the arteries of trade and the natural sources of their mechanical power, the nationalization of all industry could soon be expected. Our forefathers were alert to resist all encroachments upon their rights."

"If we wish to maintain what they established, we shall do well to leave the people in the ownership of their property, in control of their government and under the protection of their courts."

Every organization like this is of incalculable value in times like these. The spirit that inspired your organization is the spirit that has always risen to protect and preserve the great principles of our freedom, and will protect and preserve them through the pressure of the times that are upon us.

The Burlington is nothing without the men that serve it, and with them it stands out today as it has for more than a generation, as one of the great institutions of the country. The greatest asset that it has is in the spirit of its veterans and the example that they set to officers and men alike.

"Hold fast that which is good."

Motor-Generator Locomotives for the New Haven

Alternating Current from Trolley Converted to Direct Current for Motors on the Locomotives

THE New York, New Haven & Hartford has ordered from the General Electric Company, and the American Locomotive Company seven single phase locomotives of a new type. Five of these units are for freight service and will be used on the main line between Oak Point and New Haven. The other two are switching locomotives and will be used in general yard service. Whenever double heading, these locomotives will function in multiple unit with the present single phase locomotives.

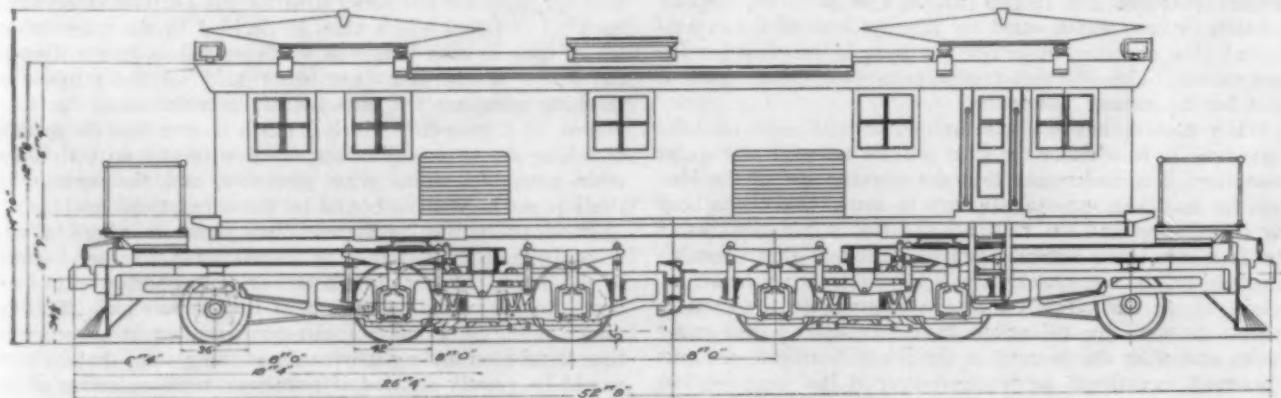
The design of this type of locomotive is unusual in that although it is actuated from a single phase trolley it does not have alternating current traction motors. Each locomotive, in fact, contains a traveling substation and will be equipped with a synchronous motor-generator set for converting the 11,000-volt 25-cycle single phase supply to direct current, and with direct current railway motors driving the axles.

Power is collected by the usual slider pantograph trolley and is delivered to a main transformer situated in the locomotive cab. This main transformer steps down the trolley potential to 2,300 volts, which drives a single phase synchronous motor direct connected to the main generator. The main generator which delivers current to the traction motors

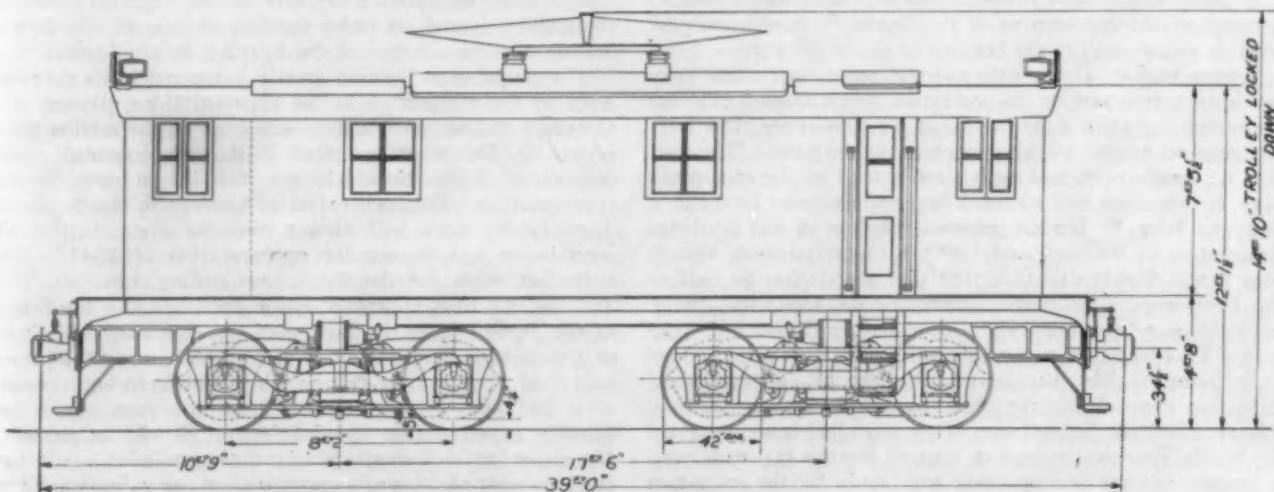
is designed with a variable field and the speed of the locomotive is regulated by field control of this generator. The traction motors are of the standard series direct current railway type, the performance of which is well known. They are geared to the axle through cushion type gears which allow a small movement of the gear ring about the gear hub or center, thus minimizing shocks and stresses in the gears and pinions.

Protective devices have been studied with great care. Between the pantograph trolley and the main transformer a time limit automatic oil circuit breaker is installed. Between the direct current generator and the motors are a high speed circuit breaker and line switches. The high speed circuit breaker will afford protection to both the motors and the generators and will ordinarily prevent the opening of the time limit switch or of the trolley or feeder sectionalizing switches and will thus prevent any interference with the continuous operation of the motor-generator set.

The system of control, by varying the field strength of the generator used, in connection with the characteristics of the motor-generator set, gives a locomotive which is extremely flexible and adaptable to all operating conditions.



Side Elevation of One of the Five Motor-Generator Type Freight Locomotives



Side Elevation of One of the Two Motor-Generator Type Switching Locomotives

It also has the very desirable characteristic of operating at a power factor of unity or better under all ranges of load. The set has been made of sufficient capacity to take care of the rated loads and will also furnish an appreciable amount of wattless current, especially at light loads for power factor correction. This tends to improve the trolley voltage for all load conditions and should be of material benefit in the operation of the entire system.

Conferences on Valuation

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION is now conducting an experiment, with a view to the expediting of its valuation work, for the purpose of ascertaining whether much of the time that has been and is being consumed in protracted hearings on the protests of the carriers against the tentative valuation reports cannot be saved by the conference method. The commission, by Division I, which is in immediate charge of the work of the Bureau of Valuation, some time ago authorized the bureau, under the direction of Commissioner Lewis, in two cases in which tentative reports had been served, to hold conferences of experts representing interested parties and the bureau, "for the purpose of simplifying the issues, and wherever possible and not detrimental to the public interest, of arriving at agreements with respect to controverted points, any agreements arrived at to be stipulated for the record." The commission did not commit itself to the adoption of any change in procedure, its authorization going only to the extent of affording a thorough test of the conference idea in two cases. The Atchison, Topeka & Santa Fe case was selected for the first trial of the experimental plan and the conference has been in progress for the past month. The commission expects to select a large eastern road for the second conference.

While nothing has yet been decided or will be decided for some time as to whether the plan will be adopted as regular procedure, it is understood that the working out of the idea thus far has been very satisfactory in many respects to both the commission and the railroad and that stipulations as to the facts are being agreed upon to an extent that promises to reduce greatly the time that will be required for the actual hearings. In the past some of the hearings on the protests against the tentative valuations have been spread over many weeks, and when the hearing in the Great Northern case was adjourned recently to be resumed later it had run for 116 days of actual hearings and had accumulated something like 10,000 pages of testimony. Before the hearing is concluded it is likely that it will cover 150 days. It is stated that as a result of the conferences in the Santa Fe case it may be possible to accomplish the hearing in about 30 days.

Representatives of the state railroad commissions that have taken an active part in the valuation proceedings heretofore are remaining aloof from the Santa Fe conference after having gone on record as being opposed to the plan. The fact that the commission had authorized a trial of the conference plan in two cases was outlined by Commissioner Lewis in a letter to John E. Benton, general solicitor of the National Association of Railway and Utilities Commissioners, stating that it was highly desirable that that association as well as the Presidents' Conference Committee on Valuation, make plans to be represented by the necessary engineers and land men. This was then communicated to the state commissions in a letter by Mr. Benton and Eugene W. Reed, special valuation counsel for the state commissioners' association, who said that the general idea of the plan had been suggested by W. G. Brantley, valuation counsel for the railroads, and a protest against the proposal was made by the valuation committee of the association.

Resolutions were adopted by the valuation committee and

special advisory committee on valuation of the association: "That it is the unanimous sense of this meeting that the plan of settling controverted issues in valuation cases after tentative valuations are served, by referring such issues to conferences of employees of the Interstate Commerce Commission and of interested carriers for the purpose of arriving at agreements to be stipulated for the record, is not in conformity with the provisions of the valuation act, nor in the public interest. As we interpret the valuation act, and the purpose of Congress expressed thereby, the value which the commission is to report of the property of each common carrier, subject to the jurisdiction of the commission, is to be a value determined by the exercise of the commission's own judgment, upon the facts developed by the investigation provided for, and not an amount agreed upon to compromise exaggerated claims of the carriers. * * * It will be understood that this protest does not apply to conferences upon underlying engineering, land and accounting reports, while in the course of preparation, before tentative valuations are served, and of the character that have heretofore been held by the Interstate Commerce Commission."

The committee took the position that "the result of valuation proceedings is to be a value found, and not one reached by negotiations, as the result of compromising conflicting views," and that it objected to the plan "because we believe the result will be to pile compromises upon compromises, whereby overvaluations will be reached." The committee also concluded that the association did not have such experts as would be necessary to represent the state commission adequately at such conferences and that it did not have the money nor the means of raising the money to employ them.

According to those who have taken part in the conferences, however, they are not being held for the purpose of deciding the kind of issues which must be decided by the commission, which uses its own judgment in fixing values in the light of the facts. Rather they are being held for the purpose of reaching agreements upon some of the voluminous facts involved, by a procedure which is much shorter than the method of taking the testimony of numerous witnesses on both sides, often assembled from great distances, and the commission itself is not necessarily bound by the stipulations made.

Incidentally the conference plan seems to afford a way around the difficulty which developed some time ago because of the desire of the railroads to have an opportunity to have access to the valuation records of the commission. The demand of the St. Louis Southwestern resulted in an order by the commission sealing its records on the ground that its work would be greatly delayed if numerous representatives of the carriers were to be continually seeking opportunities to inspect the records. The St. Louis Southwestern took the case to court and after a decision by the Supreme Court the commission issued an order opening certain of the data to examination in advance of the hearing on application.

The commission is being greatly hampered in its valuation work by the meagerness of the appropriations allowed it by Congress and unless Congress acts early in the session which begins in December to grant it the supplemental appropriation of \$350,000 which was included in the deficiency appropriation bill which failed of passage in the Senate on June 7, the work will almost come to a standstill. The commission has its regular appropriation of \$647,260 for valuation work for the fiscal year ending June 30, 1925, and under a plan approved by the president and the Bureau of the Budget after the failure of the deficiency bill, it has so apportioned that amount so as to use it during the present half year at about the rate which would have been possible if it had been allowed \$997,000 for the year. It is confidently expected that the deficiency bill will be passed in December but if it should not be the commission would have used up most of its year's appropriation for valuation. Even with the amount currently available it has been found necessary to reduce the valuation force.

Advertising a Factor in Moulding Public Opinion*

Legitimate Business Held to Have Obligation to Teach Employees and Public Real Facts

By P. L. Thomson

Publicity Manager, Western Electric Company, President, Association of National Advertisers

ONE OF THE NOTABLE SPEECHES at the International Advertising Convention in London last summer was made by Lady Astor. In the speeches which preceded hers there had been a great deal of glorification of advertising so that you can well imagine what a contrast was afforded when the brilliant member of Parliament opened up in this wise:

Lady Astor Disagrees

"You have been told that the progress of the world depends upon your advertisements. I do not think so. I think you are a world danger. Why, your business is to try to make people think what you want them to think. That is massed hypnotism. You are a danger to civilization. The world is suffering from over-advertisement and not under-advertisement. I say you are a positive nuisance. We women know the material and moral danger of advertisement. Why do women buy recklessly? Because men advertise recklessly. And then you blame us. There have been more homes wrecked from advertisements of summer sales, clearances, and something reduced than from any other one thing in the world."

There is a challenge for you. Of course, Lady Astor is right about the tremendous power which lies in advertising. The point is, are you making that responsibility count for evil or for good?

Now advertising to build good-will may relate simply to your own business, or it may be so informative and educational in character that it adds to the store of the public's knowledge of business and government and makes for better citizenship. That may sound very much like blue sky, but I think I can prove it to be extremely practical.

Now, if in Chicago today you had a condition of unemployment as acute as it was in London a year ago when I was there, if you had a demoralized condition of retail trade with stocks piled up and the proprietors losing money because the public would not, or could not buy; if your electric light company and your telephone company were unable to give good service because the franchises under which they were forced to operate did not allow them rates sufficient to meet their expenses, if your street car system and your elevated railways, and say half of the railroads that enter Chicago were tied up with strikes, if money was tight, nobody would invest in real estate or start new industry because no one could foresee what would be the next step of the city, or the state, or the government stepping in to interfere or actually operate business, or tax it to death—if these things, gentlemen, all of them, or just a few of them were true, then I would say that that came pretty near being hell in Chicago. Things haven't been so very different from that over in Russia, you know, and yet there are people in this land who are trying to bring about a condition in which our cities, and our states, and our country can embark upon some of these same experiments that have brought Russia into its present state of economic chaos.

Now perhaps you think I am going to make a political speech, but such is not the case. I am here to talk economics.

I am here to plead for the orderly operation of business and government and for the place which advertising may play in contributing to peace and prosperity, if we work out our problem in a spirit of conciliation and sanity. Two dangers menace this country today—one the indifference of the average man to his duties as a citizen, and the other, the attempts of those who seek to undermine confidence in business and government. Never before in the history of the country has there been so great need for the education of the people on the actual facts as to the soundness of our economic, political and social structure. Do you realize that at this moment scattered over the country are men engaged in the business of breeding hate and distrust as between one group of men and another, and one section of the country and another? Labor is being told to hate capital, when as a matter of fact they must inevitably be partners. The working man is being condoled for the sad state into which the so-called capitalistic system has dragged him, when as a matter of fact American labor is enjoying a condition of prosperity unequalled in our own country or any other country in the history of the world. Agricultural communities are being told that their interests are naturally antagonistic to those of industrial communities, which is not true.

The farmer is being told that the railroads upon whom he depends for the transportation of his product, are robbing him and are his natural enemies, when, as a matter of fact, they too are partners in a great enterprise. Mistrust of sound business management is being bred with the promise of government ownership, which means political management—offered as a panacea for all of our economic ills, and history has over and over again proven the contrary true.

Last week you may have heard over the radio, that great economist, Herbert Hoover, point out the true significance of government ownership. He spoke without color of an partisan feeling or prejudice, a plain statement of fact in answer to a curious agglomeration of untried theories. Would that every citizen could be set straight on vital information of that character. Our American business structure is the most efficient piece of machinery in the world when it is working smoothly, but it is a delicate piece of machinery and easily thrown out of gear. Right now, I am sorry to say, there are too many people trying to throw a monkey wrench into that gear. If they succeed, it isn't just one group of our people that suffers. When the machinery stops, it reacts on every group, and it brings unemployment and tight money and diminishing sales and business depression.

Here is a situation which is a challenge to our sound business institutions throughout the land. Upon them falls a grave responsibility of informing their employees, their customers and the public of the facts in relation to their business, the true functions and interdependence of capital and labor, the economic place of agriculture and manufacture, or distribution and transportation, as the surest way to offset the propaganda of those who prey upon the ignorance and selfish interests of one class or another, and would experiment with these untried theories of government operation and interfere with the normal and orderly functioning of commerce.

"Very good," I hear some one say. "Obviously, education

From an address delivered before the Advertising Council of the Chicago Association of Commerce, at Chicago on October 9, 1924.

Government Ownership Principle Not American*

"A Question that Challenges Our Whole Scheme of Government" and Threatens Liberties of People

By Hale Holden,
President, Chicago, Burlington & Quincy Railroad

WE ARE MEETING TONIGHT in the beautiful capital city of your magnificent state, transformed in the span of life of men now living, from a prairie wilderness to a great empire. Not to speak of your cities, proud of their schools, churches, libraries and homes and their prosperous factories and mercantile establishments, there are today 125,000 productive farms in Nebraska. They must be productive to show a corn crop of over two hundred million bushels worth \$1.00 per bushel to the farmer, and a wheat crop of over fifty million bushels, worth \$1.10 per bushel and going to market at the rate of a million dollars a day, and if you add the value of all their products, it is said they will easily reach the huge total of seven hundred and fifty million dollars taken out of the ground in this year, 1924.

This is wealth; it is productive wealth; it is not like the working of the mine which exhausts itself as it produces, but is a permanent creation and addition to the resources of mankind. It is wealth that in a single year has been taken from the same Nebraska soil that before the coming of the railroad was described as sand hills unfit for cultivation or for human habitation, and that in the years to come will continue to produce in even greater abundance.

Now what power, what agency, has done most to enable industrious and intelligent farmers to produce such stupendous results in making desert places blossom as the rose? The influence of the reaper and other labor-saving devices have done much for the farmer, but all other agencies combined have not done as much as the building of railroads, for without railroads there would have been no markets, and without markets, products of the soil have little value.

These railroads, up to this time, so far as the investor and his risk are concerned, have been enterprises in which men and women have placed their savings in precisely the same sense as the farmer has purchased land, the merchant has opened his store and the manufacturer has built his factory. Farmer, merchant, factory owner and railroad stockholder alike have invested their money voluntarily in enterprises where there was the risk of loss, in the hope of profit, and relying upon the equal protection that is guaranteed by the laws of the country. This is the economic system under which twenty billion dollars have been invested in the railroads of this country.

It has been a beneficent system and part and parcel of the economic system to which President Coolidge alluded and which he defended in his recent address on Labor Day, and in which he said:

"We have in these United States not only the best paid workers in the world, but the best paid workers that ever lived in this world."

He calls it the American policy, which is working out, he says:

"With a success more complete for humanity than was ever before accomplished anywhere else."

The American way is the way of voluntary co-operation—with free people working together, with a civilization that is based on liberty for and protection of private initiative and

enterprise, advancing steadily, through contrast with old world systems based on paternalism and bureaucracy.

In the declaration of principles set forth in your constitution and by-laws, I find similar views expressing your sentiments towards the Company and its policies, and in which you pledge the members:

"To teach and to practice loyalty, fidelity and patriotism in the administration of the Company's business, wherever we may be," and

"To promote such measures as are conducive to the general good of our Company, our country and our homes."

We join together our country, our homes and our railroad company as a common cause to work for, which is the American spirit and policy to which President Coolidge refers.

This has, it seems to me, an especial significance to men whose best years are spent in the service of the railroad company, and who can see in retrospect how closely their interests as railroad workers are bound up in the interests of home and country. Working for the railroad company has been your daily occupation and pleasure, as you have been each day also working for your homes. In many cases a large motive has been the securing of a home, and as one may see his home improved each year and may take pride in every new convenience and may rejoice in the growth and prosperity of his country, so may he naturally take pride in the growth and improvement of the railroad he is working for.

Now, my fellow employees, as these sentiments of good will are the sentiments that really animate us, and as we appreciate the development of our country and of its resources under this American system of individual enterprise, in conditions of freedom, and as we count the blessings of the American citizen that have been realized under that system, we stand, if we are true Americans, in a spirit of reverence before the institutions which we have founded and, if we are true Americans, with an invincible determination that these institutions shall not be undermined nor destroyed.

These are trying times, made so mainly by impatience under the restraint of conditions thrown about us as a result of the World War. We went to war for a great principle and nobly sustained our share of the common burden and were given our full share of the glory in what was accomplished. Peace was declared, but there has been no peace; battle and bloodshed came to an end, but the great forces set in motion have continued to exert their pressure upon all of the peoples of the world and we have not escaped the heavy burden of our full share. History shows that after great convulsions of this character, years of patient effort, sacrifice and self-denial follow, in the paying of the price that war entails and this price is levied on all alike. The paying of it tries the mettle of the spirits of men and women and out of the long continued pressure is born the impatience and rebellion which searches for new remedies and patent expedients. The leaders who thrive on this discontent are the preachers of radical doctrines and the proponents of plausible but untried and unsound remedies for the discontent that is prevalent throughout the land. These are the times when

*Abstract of an address delivered at annual banquet of the Veterans' Association of the Burlington at Lincoln, Neb., on October 6, 1924.

the American spirit, which had its beginning at Bunker Hill, arouses and asserts itself with the grim determination that the things that were fought for in the making of this country are infinitely more vital and important to fight for today than ever before, and will be defended and preserved with the same spirit of devotion and self-sacrifice that was thrown into the balance in winning the freedom of our institutions in those early days.

We are in the midst of a crisis of radicalism and the demagogue is abroad in the country preaching gospels of discontent with our conditions and destruction to our institutions. These people, by cunning misrepresentation and deceptive array of facts and figures, are preying upon the prejudices of the people and are expounding false doctrines and promoting quack remedies for the simple ills that pervade the times; they are simple ills and need but simple remedies, patience, industry, determination and a cool head to surmount them.

Regardless of political party, we will not, in this generation any more than we have in earlier times of trouble, surrender any single one of the great principles which underlie our American form of government, and upon which the freedom and liberties of American citizenship rest. We have not failed to note, as a part of the radical propaganda of the times, the specious argument that government ownership of the railroads is one of the great measures of relief that the country needs, and that under it we shall have better service, lower rates and higher wages. We that live with and operate the railroads have walked with this shadow beside us all of our lives, and probably it will be with those who come after us; but nevertheless in this day and generation, and in spite of the troubous conditions to which I have referred, I believe that there is less reason to expect that the government of the United States will take over and undertake the operation of the railroads of the country than perhaps at any time since the railroads began to operate. My principal reason for making this assertion is that I believe the American people today understand more clearly the so-called railroad question than ever before, have more faith and belief in the upright purposes and spirit that animate the operators of American railroads, whether they be employes or officers, and have a settled determination to preserve the principles that underlie the private operation of these great arteries of transportation.

Government Ownership Promoted by Ambitious Politicians

As we count the blessings of the American people, that have been realized under the American policy to which President Coolidge referred, we cannot contemplate the substitution of a bureaucratic system which certain ambitious politicians are advocating throughout the country as government ownership, and we cannot refrain from discussing the matter, because present-day conditions have again made it important and because of its significance to people in all occupations and in all walks of life.

The question of government ownership is a question more important than rates that are paid for the service or wages that are earned in the service—it is not at all the question that confronted the nation when at war, but it is a nationwide question in time of peace that challenges our whole scheme of government, which rests on the consent of the governed and reserves to the people for their own free exercise, all rights not expressly delegated to the Government.

In a secondary way, it is a financial question, but of such vast proportions as to threaten the solvency and credit of the nation.

Senator Cummins of Iowa told an audience in Des Moines recently that this country is now twenty-three billion dollars in debt, and that to purchase the railroads would make the debt forty-three billions, and that as Government property

is not subject to taxation, there would follow a loss in tax revenues of three hundred and thirty-six million dollars a year, which the railroads alone are now paying in taxes. He predicted that Government ownership of the railroads would increase the burden of taxation upon the people at least twenty-five per cent.

Probable Effect on Taxation

Let us test this statement by some Nebraska figures. The total tax bill in Nebraska is about sixty million dollars per annum and the railroads are now paying five millions of it. The school taxes amount to twenty-four millions, and the railroads pay two millions three hundred thousand dollars of that particular tax. There are small school districts on our lines west where the Burlington Company pays seventy per cent of the school taxes. In Hooker county the total school tax is about \$50,000, and this company pays \$11,400 of it; in Keith county the school taxes amount to \$154,000, and the Union Pacific Railroad pays \$58,000 of that; in Thomas county this company pays forty-seven per cent of all the taxes, and out of a school tax of \$48,700 we pay \$15,600.

It seems very evident that if government ownership has the effect of depriving communities of the taxes they are now collecting from the railroads, either the public schools in many districts must be closed, or the farmers must be subjected to an increased taxation that is virtually prohibitive.

The consequences of government ownership would be felt least of all by the owners of the railroads, because they would be paid for them either in cash or in obligations of the government; few owners of railroad stocks or bonds would object to government ownership, except as their alarm for the future welfare of the country would lead them, as good citizens, to oppose it. The question, however, is not what railroad stockholders want, but what is best for the people at large. If we assume that the people are willing to double the present huge national debt and to increase their taxes twenty-five per cent for the pleasure of owning the railroads, then what? With this loss of taxes, and this increase in the public burdens, the certain result would be lower wages and higher rates, because the people at large will never be willing to submit to further increased taxation for the benefit of a special class consisting only of railroad employes and patrons.

There is another consideration which we should constantly keep in mind: In a republic like ours, governed by universal suffrage, politics and political influences would inevitably be felt under government ownership of the railroads. There was a striking illustration of this in January, 1919, when the railroads were in the hands of the Government. The Railroad Administration asked for an appropriation of seven hundred and fifty million dollars, which was urgently needed; it failed of passage in the Senate because of a political filibuster, and the payment of bills had to be postponed with much inconvenience.

We all know what happens now with the River and Harbor Bill, which is called a "pork barrel" measure because of the clamorous demands of interested sections of the country for appropriations. The same conditions are bound to arise under government administration of the railroads, only much worse, because all sections of the country will be involved.

It is only human nature that senators and representatives will be under pressure from their constituents to secure more railroads, more repairs, more improvements and better service for their localities, with the result that the sections of the country represented by the most influential politicians will be taken care of, while railroads in other sections will be allowed to run down.

The greatest interest which the public have in the railroads is in good service, and they know that in this country they are now receiving good railroad service. But the fact is undeniable and has been demonstrated in every civilized coun-

try on earth that public ownership and political management of any business tends to inefficiency and poor service. It stands to reason that where there is an unlimited public treasury to draw upon for deficits, there never will be the incentive on the part of officials and employes to practice care in the use of materials and in securing the best results that prevails where success absolutely depends upon keeping expenses within the revenues.

Many labor leaders before the war went upon record as opposed to government ownership and management of the railroads. They called it "goose step" management, because of the rigid semi-military discipline with low wages on German government-owned railways. One of them said in a public address in 1911:

"American railroads are the best managed of any in the world. The men in charge of these great systems stand head and shoulders above the railroad men of the world. There is no other class of business where the details are watched so closely as on the average railroad."

This is probably the opinion of the better class of labor leaders today, but certain experiences of a political nature during the federal administration of the roads seem to have turned the heads of others, and they are now pointing their followers to the increases in wages and increases in their own influence during that war period as reasons for desiring a return to those conditions.

Their expectations can never be realized. If the people should ever consent to burden themselves by a purchase of the railroads, there is hardly a remote possibility of a return to war conditions such as these men anticipate. No one in this country understands this situation better than Walker D. Hines, who was Director General of Railroads during the period of federal control, and expressed his view at length in a recent address to railway employes at Minneapolis, which every railroad man ought to read. Mr. Hines said that if the government should buy the railroads the railroad operation would be in charge of some Cabinet officer or special bureau, and we all know how "passing the buck" has become a fine art in Washington. The long effort of the mail carriers to get their small pay increased is an illustration.

The postmaster general could not raise their wages until Congress authorized him, and when Congress did finally give the authority, the president vetoed it because there was no money available; so that the mail carriers, after waiting for years, are still without their increase of pay.

Not long ago Hon. James C. Davis, now engaged as Director General of Railroads in winding up the affairs of the United States Railroad Administration, said in a public address:

"If the railroad ownership and operation is thrown into the maelstrom of politics, competition, especially in the way of good service, ceases; the incentive in the way of personal endeavor to succeed is gone; promotion in service would depend upon political pull, rather than faithful performance of duties and controlling ability; wages and hours of service would be determined by resolutions in conventions, political or otherwise; extensions and capital investments would depend upon Congressional action rather than commercial necessity, and the greatest and most efficient transportation system in the world would be deprived of that irresistible and invincible desire to succeed, born of personal ambition, which is always present in private enterprise, and wholly wanting in the ordinary routine of government service.

"No greater mistake, in my judgment, could be made, nor a more expensive experiment be undertaken, than to have the government permanently take over and operate the great railroad systems of this country."

But as I have stated, the people of this country will not voluntarily take this step. The arguments that may urge it are specious and false and those who advocate them fail or refuse to answer the searching questions that are put to them. They promise, when every precedent in this and other countries proves that these promises will not and cannot be performed; they blandly ignore the veritable statistics proving the lower wages and less favorable working conditions for employes, the higher charges and, nevertheless, the appalling deficits which the public has to bear, and the inferior service that government operated railroads, with rare exceptions, are known to provide.

Finally, they can point to no precedents of value to support the argument here, because no parallel can be found to the problem of rendering service to a country of such vast proportions, involving so huge an establishment in men, money and materials as government operation would present in this country.

In some countries, as in Canada in recent years, government ownership and operation has been forced upon the people because conditions had broken private operation down and the government was compelled to step in to save the service. In my opinion, that is the only way in which government operation can come about in this country and unless our railroads are given fair treatment and our adopted scheme of regulation is preserved from the meddling of political blocs, we may yet see the investor on strike and the management so restricted that the government will have to assume the burden.

There is every reason why this should not be allowed to happen. We are not a people that by birth or by training are inclined to work out our lives in the dull routine of government service, nor will we ever take kindly to the petty tyranny of a vast government establishment. We sometimes like to run for office and enjoy the honors and emoluments of political position, but to live under the restraints and to endure the pressure of a nation-wide bureaucracy administering our daily and hourly needs for transportation, is foreign to our concept of American freedom and is something that I believe the American citizen will not endure.

The American spirit still lives in the hearts of the great majority of the people and as often before, slow to action, but certain in action when aroused, this spirit is stirring the consciences of the people into action to again defend the Constitution, the integrity of the courts and the freedom of our institutions from attack.

The President said in his recent address:

"The people do not propose again to entrust their government to others, but to retain it under their own control,"

and again:

"If the people lose control of the arteries of trade and the natural sources of their mechanical power, the nationalization of all industry could soon be expected. Our forefathers were alert to resist all encroachments upon their rights."

"If we wish to maintain what they established, we shall do well to leave the people in the ownership of their property, in control of their government and under the protection of their courts."

Every organization like this is of incalculable value in times like these. The spirit that inspired your organization is the spirit that has always risen to protect and preserve the great principles of our freedom, and will protect and preserve them through the pressure of the times that are upon us.

The Burlington is nothing without the men that serve it, and with them it stands out today as it has for more than a generation, as one of the great institutions of the country. The greatest asset that it has is in the spirit of its veterans and the example that they set to officers and men alike.

"Hold fast that which is good."

Motor-Generator Locomotives for the New Haven

Alternating Current from Trolley Converted to Direct Current for Motors on the Locomotives

THE New York, New Haven & Hartford has ordered from the General Electric Company, and the American Locomotive Company seven single phase locomotives of a new type. Five of these units are for freight service and will be used on the main line between Oak Point and New Haven. The other two are switching locomotives and will be used in general yard service. Whenever double heading, these locomotives will function in multiple unit with the present single phase locomotives.

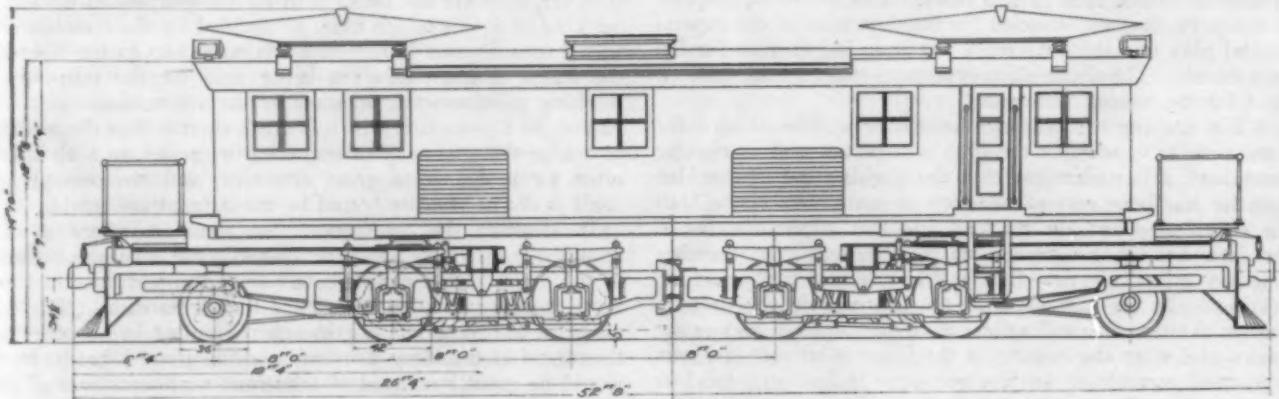
The design of this type of locomotive is unusual in that although it is actuated from a single phase trolley it does not have alternating current traction motors. Each locomotive, in fact, contains a traveling substation and will be equipped with a synchronous motor-generator set for converting the 11,000-volt 25-cycle single phase supply to direct current, and with direct current railway motors driving the axles.

Power is collected by the usual slider pantograph trolley and is delivered to a main transformer situated in the locomotive cab. This main transformer steps down the trolley potential to 2,300 volts, which drives a single phase synchronous motor direct connected to the main generator. The main generator which delivers current to the traction motors

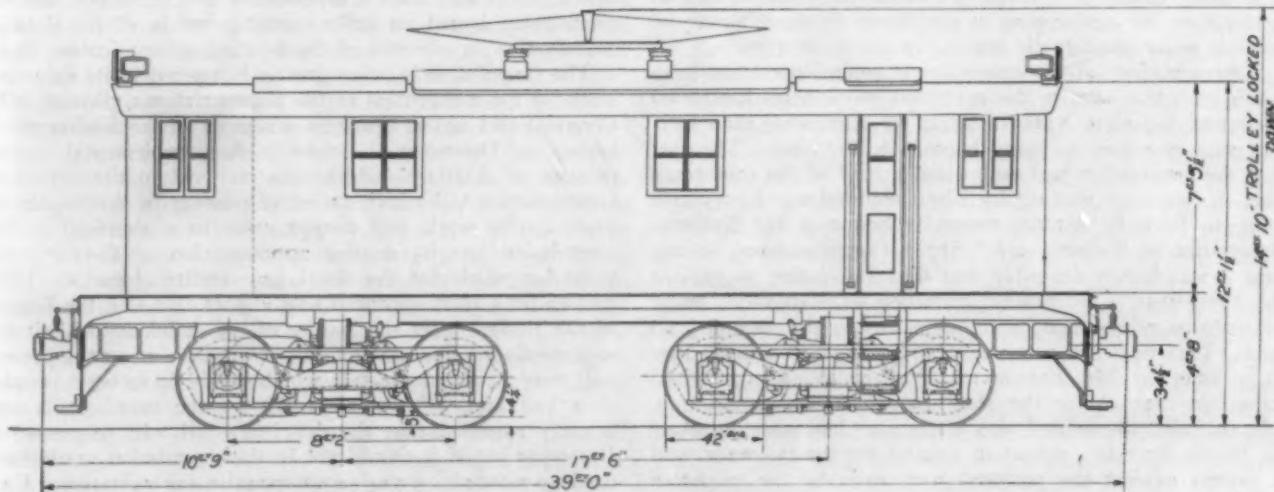
is designed with a variable field and the speed of the locomotive is regulated by field control of this generator. The traction motors are of the standard series direct current railway type, the performance of which is well known. They are geared to the axle through cushion type gears which allow a small movement of the gear ring about the gear hub or center, thus minimizing shocks and stresses in the gears and pinions.

Protective devices have been studied with great care. Between the pantograph trolley and the main transformer a time limit automatic oil circuit breaker is installed. Between the direct current generator and the motors are a high speed circuit breaker and line switches. The high speed circuit breaker will afford protection to both the motors and the generators and will ordinarily prevent the opening of the time limit switch or of the trolley or feeder sectionalizing switches and will thus prevent any interference with the continuous operation of the motor-generator set.

The system of control, by varying the field strength of the generator used, in connection with the characteristics of the motor-generator set, gives a locomotive which is extremely flexible and adaptable to all operating conditions.



Side Elevation of One of the Five Motor-Generator Type Freight Locomotives



Side Elevation of One of the Two Motor-Generator Type Switching Locomotives

It also has the very desirable characteristic of operating at a power factor of unity or better under all ranges of load. The set has been made of sufficient capacity to take care of the rated loads and will also furnish an appreciable amount of wattless current, especially at light loads for power factor correction. This tends to improve the trolley voltage for all load conditions and should be of material benefit in the operation of the entire system.

Conferences on Valuation

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION is now conducting an experiment, with a view to the expediting of its valuation work, for the purpose of ascertaining whether much of the time that has been and is being consumed in protracted hearings on the protests of the carriers against the tentative valuation reports cannot be saved by the conference method. The commission, by Division I, which is in immediate charge of the work of the Bureau of Valuation, some time ago authorized the bureau, under the direction of Commissioner Lewis, in two cases in which tentative reports had been served, to hold conferences of experts representing interested parties and the bureau, "for the purpose of simplifying the issues, and wherever possible and not detrimental to the public interest, of arriving at agreements with respect to controverted points, any agreements arrived at to be stipulated for the record." The commission did not commit itself to the adoption of any change in procedure, its authorization going only to the extent of affording a thorough test of the conference idea in two cases. The Atchison, Topeka & Santa Fe case was selected for the first trial of the experimental plan and the conference has been in progress for the past month. The commission expects to select a large eastern road for the second conference.

While nothing has yet been decided or will be decided for some time as to whether the plan will be adopted as regular procedure, it is understood that the working out of the idea thus far has been very satisfactory in many respects to both the commission and the railroad and that stipulations as to the facts are being agreed upon to an extent that promises to reduce greatly the time that will be required for the actual hearings. In the past some of the hearings on the protests against the tentative valuations have been spread over many weeks, and when the hearing in the Great Northern case was adjourned recently to be resumed later it had run for 116 days of actual hearings and had accumulated something like 10,000 pages of testimony. Before the hearing is concluded it is likely that it will cover 150 days. It is stated that as a result of the conferences in the Santa Fe case it may be possible to accomplish the hearing in about 30 days.

Representatives of the state railroad commissions that have taken an active part in the valuation proceedings heretofore are remaining aloof from the Santa Fe conference after having gone on record as being opposed to the plan. The fact that the commission had authorized a trial of the conference plan in two cases was outlined by Commissioner Lewis in a letter to John E. Benton, general solicitor of the National Association of Railway and Utilities Commissioners, stating that it was highly desirable that that association as well as the Presidents' Conference Committee on Valuation, make plans to be represented by the necessary engineers and land men. This was then communicated to the state commissions in a letter by Mr. Benton and Eugene W. Reed, special valuation counsel for the state commissioners' association, who said that the general idea of the plan had been suggested by W. G. Brantley, valuation counsel for the railroads, and a protest against the proposal was made by the valuation committee of the association.

Resolutions were adopted by the valuation committee and

special advisory committee on valuation of the association: "That it is the unanimous sense of this meeting that the plan of settling controverted issues in valuation cases after tentative valuations are served, by referring such issues to conferences of employees of the Interstate Commerce Commission and of interested carriers for the purpose of arriving at agreements to be stipulated for the record, is not in conformity with the provisions of the valuation act, nor in the public interest. As we interpret the valuation act, and the purpose of Congress expressed thereby, the value which the commission is to report of the property of each common carrier, subject to the jurisdiction of the commission, is to be a value determined by the exercise of the commission's own judgment, upon the facts developed by the investigation provided for, and not an amount agreed upon to compromise exaggerated claims of the carriers. * * * It will be understood that this protest does not apply to conferences upon underlying engineering, land and accounting reports, while in the course of preparation, before tentative valuations are served, and of the character that have heretofore been held by the Interstate Commerce Commission."

The committee took the position that "the result of valuation proceedings is to be a value found, and not one reached by negotiations, as the result of compromising conflicting views," and that it objected to the plan "because we believe the result will be to pile compromises upon compromises, whereby overvaluations will be reached." The committee also concluded that the association did not have such experts as would be necessary to represent the state commission adequately at such conferences and that it did not have the money nor the means of raising the money to employ them.

According to those who have taken part in the conferences, however, they are not being held for the purpose of deciding the kind of issues which must be decided by the commission, which uses its own judgment in fixing values in the light of the facts. Rather they are being held for the purpose of reaching agreements upon some of the voluminous facts involved, by a procedure which is much shorter than the method of taking the testimony of numerous witnesses on both sides, often assembled from great distances, and the commission itself is not necessarily bound by the stipulations made.

Incidentally the conference plan seems to afford a way around the difficulty which developed some time ago because of the desire of the railroads to have an opportunity to have access to the valuation records of the commission. The demand of the St. Louis Southwestern resulted in an order by the commission sealing its records on the ground that its work would be greatly delayed if numerous representatives of the carriers were to be continually seeking opportunities to inspect the records. The St. Louis Southwestern took the case to court and after a decision by the Supreme Court the commission issued an order opening certain of the data to examination in advance of the hearing on application.

The commission is being greatly hampered in its valuation work by the meagerness of the appropriations allowed it by Congress and unless Congress acts early in the session which begins in December to grant it the supplemental appropriation of \$350,000 which was included in the deficiency appropriation bill which failed of passage in the Senate on June 7, the work will almost come to a standstill. The commission has its regular appropriation of \$647,260 for valuation work for the fiscal year ending June 30, 1925, and under a plan approved by the president and the Bureau of the Budget after the failure of the deficiency bill, it has so apportioned that amount so as to use it during the present half year at about the rate which would have been possible if it had been allowed \$997,000 for the year. It is confidently expected that the deficiency bill will be passed in December but if it should not be the commission would have used up most of its year's appropriation for valuation. Even with the amount currently available it has been found necessary to reduce the valuation force.

Advertising a Factor in Moulding Public Opinion*

Legitimate Business Held to Have Obligation to Teach Employees and Public Real Facts

By P. L. Thomson

Publicity Manager, Western Electric Company, President, Association of National Advertisers

ONE OF THE NOTABLE SPEECHES at the International Advertising Convention in London last summer was made by Lady Astor. In the speeches which preceded hers there had been a great deal of glorification of advertising so that you can well imagine what a contrast was afforded when the brilliant member of Parliament opened up in this wise:

Lady Astor Disagrees

"You have been told that the progress of the world depends upon your advertisements. I do not think so. I think you are a world danger. Why, your business is to try to make people think what you want them to think. That is massed hypnotism. You are a danger to civilization. The world is suffering from over-advertisement and not under-advertisement. I say you are a positive nuisance. We women know the material and moral danger of advertisement. Why do women buy recklessly? Because men advertise recklessly. And then you blame us. There have been more homes wrecked from advertisements of summer sales, clearances, and something reduced than from any other one thing in the world."

There is a challenge for you. Of course, Lady Astor is right about the tremendous power which lies in advertising. The point is, are you making that responsibility count for evil or for good?

Now advertising to build good-will may relate simply to your own business, or it may be so informative and educational in character that it adds to the store of the public's knowledge of business and government and makes for better citizenship. That may sound very much like blue sky, but I think I can prove it to be extremely practical.

Now, if in Chicago today you had a condition of unemployment as acute as it was in London a year ago when I was there, if you had a demoralized condition of retail trade with stocks piled up and the proprietors losing money because the public would not, or could not buy; if your electric light company and your telephone company were unable to give good service because the franchises under which they were forced to operate did not allow them rates sufficient to meet their expenses, if your street car system and your elevated railways, and say half of the railroads that enter Chicago were tied up with strikes, if money was tight, nobody would invest in real estate or start new industry because no one could foresee what would be the next step of the city, or the state, or the government stepping in to interfere or actually operate business, or tax it to death—if these things, gentlemen, all of them, or just a few of them were true, then I would say that came pretty near being hell in Chicago. Things haven't been so very different from that over in Russia, you know, and yet there are people in this land who are trying to bring about a condition in which our cities, and our states, and our country can embark upon some of these same experiments that have brought Russia into its present state of economic chaos.

Now perhaps you think I am going to make a political speech, but such is not the case. I am here to talk economics.

From an address delivered before the Advertising Council of the Chicago Association of Commerce, at Chicago on October 9, 1924.

I am here to plead for the orderly operation of business and government and for the place which advertising may play in contributing to peace and prosperity, if we work out our problem in a spirit of conciliation and sanity. Two dangers menace this country today—one the indifference of the average man to his duties as a citizen, and the other, the attempts of those who seek to undermine confidence in business and government. Never before in the history of the country has there been so great need for the education of the people on the actual facts as to the soundness of our economic, political and social structure. Do you realize that at this moment scattered over the country are men engaged in the business of breeding hate and distrust as between one group of men and another, and one section of the country and another? Labor is being told to hate capital, when as a matter of fact they must inevitably be partners. The working man is being condoled for the sad state into which the so-called capitalistic system has dragged him, when as a matter of fact American labor is enjoying a condition of prosperity unequaled in our own country or any other country in the history of the world. Agricultural communities are being told that their interests are naturally antagonistic to those of industrial communities, which is not true.

The farmer is being told that the railroads upon whom he depends for the transportation of his product, are robbing him and are his natural enemies, when, as a matter of fact, they too are partners in a great enterprise. Mistrust of sound business management is being bred with the promise of government ownership, which means political management—offered as a panacea for all of our economic ills, and history has over and over again proven the contrary true.

Last week you may have heard over the radio, that great economist, Herbert Hoover, point out the true significance of government ownership. He spoke without color of an partisan feeling or prejudice, a plain statement of fact in answer to a curious agglomeration of untried theories. Would that every citizen could be set straight on vital information of that character. Our American business structure is the most efficient piece of machinery in the world when it is working smoothly, but it is a delicate piece of machinery and easily thrown out of gear. Right now, I am sorry to say, there are too many people trying to throw a monkey wrench into that gear. If they succeed, it isn't just one group of our people that suffers. When the machinery stops, it reacts on every group, and it brings unemployment and tight money and diminishing sales and business depression.

Here is a situation which is a challenge to our sound business institutions throughout the land. Upon them falls a grave responsibility of informing their employees, their customers and the public of the facts in relation to their business, the true functions and interdependence of capital and labor, the economic place of agriculture and manufacture, or distribution and transportation, as the surest way to offset the propaganda of those who prey upon the ignorance and selfish interests of one class or another, and would experiment with these untried theories of government operation and interfere with the normal and orderly functioning of commerce.

"Very good," I hear some one say. "Obviously, education

of the people is the answer to prevent them from jamming the wheels of progress, but just how is advertising going to help?" Fair enough, I'll tell you. Here is a bank down in St. Louis, the Mercantile Trust Company. The people who operate that bank understand that when a condition of economic chaos, such as I pictured for Chicago, envelopes St. Louis, every individual and every business undertaking down there suffers, and so that bank lifts up its voice through its advertisements in the daily newspapers to say to the people of that community that the railroads have made that great city, that those who seek to embarrass the railroad management by inflicting unreasonable government restrictions as to wages, taxes, rates which will so jeopardize the ability of those roads to continue to function and carry the commerce into and out of St. Louis—those people are undermining the future prosperity of the city and its people.

The Railroads

What are you doing in Chicago, you business interests, to create a like public opinion in relation to your great agencies of transportation? To the congress which will assemble on December 4 will go legislators pledged to continue the policy of more governmental interference with the railroads. Remember that in the four years that the railroads have had an opportunity to earn under the Transportation Act, a return of $5\frac{3}{4}$ per cent on the valuation figures set by the Interstate Commerce Commission, the average never reached a point higher than 5.1, and this year will be substantially less, and this in spite of tremendous economies in management. With inadequate earnings, of course, the roads are unable to attract new capital and their borrowing capacity is limited.

What are you doing to help the railroads here to create a sound public opinion that will assure them a square deal and a chance to grow? You bankers, you mail order houses, you great department stores, you manufacturers, what are you doing to help?

When the last session of Congress died there were 134 bills interfering with the operation of the railroads. What are you doing to show the people of Chicago and Illinois the asset value of these great arteries of transportation and the danger of impairing their operation?

The interesting thing is that you can help them and help yourselves at the same time. When the railroads are prosperous they buy steel rails and cars and equipment of every kind made right here in Chicago, and that means plenty of work in Chicago and Gary and Pullman and Hawthorne and your other manufacturing centers. Busy workmen buy more clothes and eat more bread and more meat, and that means not alone better business for stores and markets in Chicago, but a bigger market and better prices for the farmers who grow wheat and corn and cattle. Yet it is the farmer who is demanding that railroad rates be reduced. Why don't you Chicago business interests, through your advertising show up the fallacy of this propaganda which has made the farmer feel that you and the railroads are his enemies? Why don't you tell the story of your economic dependence upon each other, that you both may live and prosper? The packing houses did some advertising of this kind a few years ago when the public mind had been set against them as profiteers, but they waited until they were on the defensive. It is always good advertising strategy to tell your story before you have to. Tell it as something that you are proud of, but don't leave it for a single industry to do. Armour & Co. are doing some effective educational work of this kind right now, but it is a job for you all.

Metropolitan Life Insurance Co.

Here is another case—the wonderful advertising campaign of a great insurance company, the Metropolitan, recognizing with broadest vision the responsibility which it owes not

alone to its policy holders, but to the American public, to advance the cause of better health through elimination of disease and accidents and the application of preventive hygiene, a vast educational campaign involving the expenditure of many hundreds of thousands of dollars. What better answer to the radical who talks about the greed and selfishness of big business? Here is advertising that is making a better America because it discloses to the man on the street, the high purposes and useful service of a great corporation.

Another case in point is from the same company. It is a letter sent out by its president to twenty-one million policy holders. Listen to it:

"The assets of this company, amounting to a billion and a half, belong to its policy holders. Many millions of this money of yours are invested in the securities of electric light and power companies. These companies have a right to fair and reasonable treatment on the part of the supervising and regulating officials. Just remember that when they are unfairly treated it is you and your neighbors who suffer because it is your money invested in insurance policies that is being tampered with."

What do you say to that as the answer to the agitator who berates Wall Street and capital and prates of the advantages of public ownership?

"Wall Street owns the utilities" used to be and still is the cry of the agitator. Bunk, pure bunk. Two million people own the electric light companies, half a million people own the nation's telephone system, and a million people own the stocks of our railroads, besides which an interest in these great utilities is represented by every depositor in a savings bank and every holder of an insurance policy. But the public doesn't understand that, because the public has not learned this story of the community of interest which it has with business. A lot of people still believe that the prosperity of one group can be secured only at the expense of another. Here is an opportunity for legitimate business to dispel that very common misunderstanding.

Western Electric Company

The Western Electric Company has for several years carried on national advertising in behalf of a better understanding by the public of the electrical industry as a whole and of the public utilities in particular. Other manufacturers have done likewise. We have had much testimony to the usefulness of this campaign to those in behalf of whom it was conducted and at the same time we have been well convinced that it constituted good advertising of our business. I confess that I can conceive of no better advertising for a bank than that conducted by the Mercantile Trust Company of St. Louis or similar advertising by the Union Trust Company of Cleveland. And I challenge a better means of building confidence in the stability of any institution than that employed by the Metropolitan Insurance Company.

An outstanding example of sound public relations in which advertising has played a conspicuous part is the Bell Telephone System. Month after month for more than 15 years it has been telling to millions of magazine and newspaper readers, its story of service—a story of problems, achievements and ideals. It has won the confidence of customers, investors, and employees alike and all of these have co-operated with its management to make America's telephone service what it has been from the very beginning, the standard of the world.

Chicago Utilities

I made reference to the field of public utilities. Here in Chicago you have outstanding examples of the value of intelligent publicity done by utilities on their own account. Who does not hold respect for the Commonwealth Edison, the Northern Illinois Utilities Company, the Peoples Gas

& Coke Company, the Illinois Bell Telephone Company, H. M. Byllesby and the others who are building not alone for their own success, but for a greater Chicago and a greater America.

Here in Chicago users of electric light and telephone service interested in adequate service at fair rates are being told of the soundness of the securities in these public service organizations and are becoming part owners of the business through the investment of their savings in securities which offer safety of principal and reasonable assurance of fair earnings. Do you men of Chicago appreciate the asset value to the community of substantial public service organizations like these? If you do and if the time should come for them to ask of the voters for extensions to franchises, I hope in your advertising you will be willing to lift up your voices in the interests of reasonable request of that character.

Many of you are large employers of labor, and through company magazines you are reaching them from month to month. Do you make it a point in these magazines to explain to your people the way in which the business is operated, the use to which invested capital is put, the problems of financing the business, of turnover of investment and the like. Have you ever indicated how your dollar of income is divided, what you pay them for labor, what you pay for raw material, for rent, insurance, for the use of your borrowed money and how much is left as profit? This is the sort of information that makes good American citizens out of potential socialists.

I could mention many other examples, but time does not permit. In conclusion, just one practical suggestion that you utilize some of your advertising space to urge the people of the community to study fairly the issues of the forthcoming election and then be sure to vote. Less than 50 per cent of the qualified voters actually cast a ballot at the last presidential election. That means government not by majority, but government by minority, which is undemocratic and un-American.

Economics, Not Politics

Last month at the call of the President, we celebrated National Defense Day. At that time most of us had our minds fixed upon the nation's preparedness to meet a foreign foe; but, my friends, America's danger lies not outside of her borders, but from within. Apathy and indifference on the one hand, and the uninformed being used as tools by radicals, on the other—these are the twin evils to be overcome. I urge upon you that legitimate business owes itself and the community an obligation to teach men and women the real facts, that their judgment may not be affected by the hysteria of those who would upset our economic order. It is for each one of you to study how your company may do its share in this great work.

Our national menace is from within. Let us make advertising a consistent defender of America and its institutions, and every day of the three hundred and sixty-five our American Defense Day.

Periodical Locomotive Repairs at Terminals

Union Pacific Power Thoroughly Inspected and Repaired by Specialized Gangs at 30-Day Intervals

WITH THE ESTABLISHMENT of long locomotive runs on the Union Pacific a year or more ago, and the exacting transportation requirements attendant thereto, the problem of immediate improvement in terminal attention and repair methods became of particular importance.

Prior to the inauguration of long runs, it was the practice on the Union Pacific to hold locomotives for repairs only as necessity arose. As a result, the handling of locomotives was not satisfactory; engines were out of service at frequent intervals for repairs; certain periods for boiler work and others for machinery repairs. In addition, the mechanical department was not always in a position to know the condition of an engine with reasonable assurance until an inspection was made. Experience also showed that too much dependence was being placed on the engineman's report of the condition of an engine. Delays occurred constantly owing to minor defects not reported by either the engineman or the inspectors.

In order to overcome these unsatisfactory features, a systematic program for handling repairs was established. Under this system, when a locomotive is held for a regular monthly inspection as required by the federal law, it is now the practice to hold it long enough to perform all the work required to put it in condition to perform service until the next periodical inspection is due. It has been found that with the ordinary daily trip inspections, and very light running repairs during the interval, locomotives can be prepared for and successfully operated over a period of 30 days with results that are very gratifying.

This plan was first put into effect at the Union Pacific enginehouse at Cheyenne, Wyo., and the following outline

of the system at that point will serve to show the method of handling the work and the results accomplished.

Organization for Handling the Work

The enginehouse organization at Cheyenne has been divided into three specialized gangs to handle respectively, passenger locomotive repair work, mallet locomotive repair work, and freight locomotive repair work. The first two gangs are under the supervision of the roundhouse foreman and the third under the supervision of the assistant roundhouse foreman. Each of these gangs has been carefully organized according to the number of engines to be maintained and the requirements of the different types of locomotives handled by the gang. Men are assigned exclusively to certain work in order to secure the best possible results.

The use of two forms, samples of which are reproduced, has been inaugurated to facilitate handling the work, and to establish a definite record of the inspections. One of these forms covers the various items connected with machinery inspection, and the other the boiler inspection. Each form provides space opposite the various items of work for the signature of the employee making the inspection and repairs, and both forms are duly approved by the officers in charge after final inspection under steam has been made.

Character of Work and Time Expended

Locomotives are given a thorough inspection, and all work shown on the forms is taken care of, together with additional work which may be found necessary, such as dropping wheels, renewing flues, etc.

The average number of man-hours expended in perform-

ing this work on the different classes of locomotives at Cheyenne is as follows:

	Machinery work Man-hours	Boiler work Man-hours	Total Man-hours
Passenger locomotives	264	48	312
Mallet locomotives	330	72	402
Other freight locomotives	228	48	276

Increased Efficiency Obtained

The inauguration of this plan has practically eliminated the various minor defects which caused or contributed to engine failures, such as leaky boiler checks, gage cocks, brick arches, fireboxes, etc. A reduction of 60 per cent in freight locomotive failures per 100,000 miles was effected on the Union Pacific during the first six months of the present year, compared with the same period last year, and a reduction of 47 per cent in the number of passenger locomotive failures. The present average performance as regards engine failures is one failure per 100,000 locomotive miles. A better showing is anticipated when the system has become well established at all of the smaller round-houses.

By means of periodical repairs, the Union Pacific has

quired an average of 615 man-hours a month for inspection and repairs is now repaired in 553 man-hours, or with a decrease of 10 per cent.

As previously stated, this outline covers the system for handling the work at Cheyenne. The practice and the results are substantially the same at all other large terminals on the Union Pacific. At smaller terminals, where the number of locomotives handled does not warrant special gangs for the various types of locomotives, the work is being taken care of by men regularly assigned to certain

UNION PACIFIC SYSTEM UNION PACIFIC RAILROAD COMPANY ST. JOSEPH & GRAND ISLAND RAILWAY COMPANY		
MONTHLY LOCOMOTIVE INSPECTION REPORT		
Engine No.	Date	Location
Group	Character of Test and Work Required.	State of Work Done Inspected and Pending Work
Give engine a thorough general inspection.		
1	Grind in and align plow cracks. Replace, repair and clean out water glass cracks. Clean out and repair oil tank cracks. Check and repair oil tank cracks. Clean out and repair oil tank cracks.	
2	Overhaul air-cut switch and grind boiler checks. Grind or replace and clean brass. Overhaul blow-off cock, replace whistle valves and repair rigging. Examine and repair inspection and water supply. Water test steam pipes and inspect boiler.	
3	Replace and repair water tanks and repair leak water tanks.	
4	Test oil pump and ground. Examine and repair all air brake equipment. Test and repair reversing gear and ring gear. Repair and replace draft tube valves and ring gear. Replace cylinder and tag main valve. Test and repair oil pump and reverse. Make air pump safety test. Air pump reverse rod examined. Examine and test air reservoirs and pipes for loose connections and clamps.	
5	Inspect and repair drain cocks to water glass and columns. Align dipper to gauge glass and clean out drain pipe. Examine and repair all piping and tighten clamping. Examine, clean and repair cab heater equipment.	
6	Examine and repair fire fighting valve and steam heat line. Examine and align mud gear. Replace cylinder and tag main valve. Test and repair oil pump and reverse. Replace water connection to engine and tender. Examine, clean pipe and one if same is known.	
7	Test out and repair clutch, per instructions. Test out and repair coal probe.	
8	Examine and repair all electrical equipment.	
9	Test out and repair superheater damper outside of smoke box. Examine nozzle tip and smoke and draft appliances.	
10	Inspect and repair oak windows, curtains and deck.	
11	Examine and repair valve gear. Check wrench and adjustment.	
12	Examine cylinder packing. Examine and repair all rods, crossheads and guides for guides etc. Oil and clean all working parts and tighten all loose bolts. Clean out and repair each cylinder piston rod and piston. Replace and repair each cylinder piston rod and piston. Replace piston rod and piston.	
13	Adjust tender and driver brake piston travel. Examine and repair spring rigging. Examine, tighten and repair tend. tender and tank hoses. Examine and repair all draw and draft rigging.	
14	Grind in key-spun valves. Examine interlocking valves. Grind in separate exhaust valve (mudbox only).	
Reinspect and test out engine and place used in cab.		
Engine given thorough inspection.		
APPROVED	_____ Date, Formosa or Shop Dept.	Machine Inspector
INSTRUCTIONS	This report must be filed for each locomotive in service each calendar month. All defects discovered and reported must be repaired before engine is allowed to go into service. Report to be filed after approval by Director Formosa's office. Work assigned and performed.	

Monthly Locomotive Inspection Form Which Indicates the Extent of the Work Done at Each Monthly Repair Period

also been able to increase the monthly mileage of locomotives although at the present time, on account of the many other features involved, a definite statement regarding the amount of this mileage increase cannot be made. However, the available time of locomotives running out of Cheyenne has been increased from approximately 564 to 640 hours a month.

In addition it has been found that the present method of handling repairs effects a substantial decrease in the cost of maintaining power. A locomotive which formerly re-

UNION PACIFIC SYSTEM UNION PACIFIC RAILROAD COMPANY AND ST. JOSEPH & GRAND ISLAND RAILWAY COMPANY		
MONTHLY LOCOMOTIVE INSPECTION REPORT		
Engine No.	Date	Location
Group	Character of Test and Work Required.	State of Work Done Inspected and Pending Work
Ashbox and front end inspected and repaired.		
Front end tested for air leak and repaired.		
Plates tested for broken staybolts and repaired.		
Tall side plates and staybolts cleaned out.		
Arch tubes cleaned out and polished.		
Gaskets and gasket rigging repaired.		
Inspect and repair superheater damper inside of smoke box.		
Inspect draft apparatus inside smoke box.		
Inspect nozzle tip and bridge.		
Inspect plates in water tank examined and repaired.		
Cabs and running board examined for loose bolts, etc.		
Running boards inspected and repaired.		
Engine given thorough inspection.		
Solder Supervisor		
APPROVED	_____ Date, Formosa or Shop Dept.	Boiler Foreman
INSTRUCTIONS: This report must be filed for each locomotive in service each calendar month. All defects discovered and reported must be repaired before engine is allowed to go into service. Report to be filed after approval by Director Formosa's office. Work assigned and performed.		

This Form Is Devoted to the Boiler and Its Appurtenances

definite items of work. The same forms are being used, and the same practice is followed in giving the engine periodical and systematic repairs.

By this system, the mechanical department officers of the Union Pacific believe that a considerable advance has been made toward solving some of the more important problems on which depend the success of long locomotive runs.

Periodical repairs to locomotives give an assurance of power that can be relied on to meet transportation requirements at a cost for up-keep that is 10 per cent below the former cost, and with a substantial increase in the number of hours that power is available for service.

THE SOUTHERN RAILWAY reports that the number of carloads of peaches moved north over its lines this year aggregated 7,433, of which 6,014 came from Georgia, the heaviest movement on record. Of the Georgia peaches 5,380 cars moved through Atlanta and were sent thence; 2,106 to Washington, 3,091 to Cincinnati and Louisville and 183 to other destinations. About 500 special peach trains were run, practically all of them reaching destination on time.

Movement of the Products of Agriculture

Study Shows Possible Amplification of Information on Car Loadings Prepared by Car Service Division

By W. L. Crum

IN AN ARTICLE in the *Railway Age* of April 5, 1924, Professor H. B. Vanderblue of Harvard University discussed the nature and importance of the seasonal variations in revenue freight car loadings by commodity groups. He also presented charts of the monthly figures for such car loadings, with seasonal variations eliminated, and traced the relation of the movements shown in these charts

1924; and recent figures are published in current numbers of the Bulletin. The total index is a weighted average of eight group indexes. Each group index is in turn a weighted average of several constituents. Each constituent is a series of *relatives* (percentage ratios) with the average for 1919 as 100 per cent. In regard to the weights assigned to the individual constituents the Bulletin states: "In the agricultural index each series included was given a weight based upon the total value of that commodity marketed in 1919. Total value produced was not used because it would give undue weight to such products as corn and hay, which enter trade more in the form of livestock than as crops." It will be seen that this principle of weighting is on the whole one which renders the index appropriate from the point of view of a study of railway traffic.

Table 1 shows the weights of the eight groups, and of the constituents of the principal groups. It appears that cattle and hogs constitute 87½ per cent of Group I; butter, eggs, and poultry form 87½ per cent of Group II; and wheat and corn have 84 per cent of the weight in Group III.

The first step in the analysis is the comparison, with the known movements of car loadings, of those groups in the index of agricultural movements for which equivalent or nearly equivalent groups exist in the car loadings reports. Such groups are I, livestock and III, grains.

The seasonal variation of the total index and each principal group was determined by methods substantially similar to those used by Professor Vanderblue in the case of the car loadings data.¹

The indexes of seasonal variations for movements of livestock and grains are shown in the first and third columns of Table 2. These should be compared with the corresponding seasonal indexes for car loadings of livestock and of grain and grain products, as shown in the second and fourth columns. The comparison is facilitated by Chart 1, which shows the four seasonal indexes by a graphic scheme similar to that used in Professor Vanderblue's article.² The close similarity between the seasonal indexes of movements of livestock and car loadings of livestock is strikingly apparent.

Grain and Grain Products

The seasonal swing for movements of grains is closely similar in shape and in timing of the rise and fall to that for car loadings of grain and grain products, but the former fluctuates much more violently than the latter. This difference is due to the fact that the car loadings include flour and other mill products as well as the grains, and it may be assumed that the seasonal fluctuations in the shipments of the grain products are less extensive than in the grains. This distinction is obviously important to those roads chiefly interested in the transportation of the grains rather than of commodities manufactured from them.

The upper figure in Chart 2 compares the fluctuations from 1919 to date of movements of grains with those of car

¹ The methods were developed by Professor W. M. Persons, and are presented in the *Review of Economic Statistics* for January, 1919.

² The vertical scale used here is, however, logarithmic. The effect of this is that a month with a seasonal index of 200 per cent would appear as far above the 100 per cent normal as a month with index of 50 per cent would appear below the normal. If a simple arithmetic scale were used, 200 per cent would be as far above as 0 per cent is below.

This same logarithmic vertical scale is used in all the charts of this article.

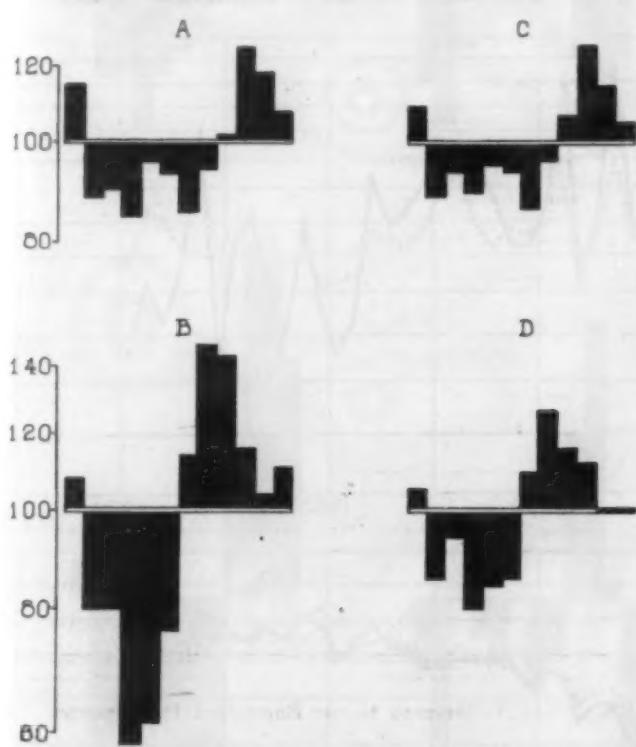


Chart 1.—Seasonal Indexes for: Movements of Livestock (A), Movements of Grains (B), Car Loadings of Livestock (C), and Car Loadings of Grain and Grain Products (D)

to the conditions in general business and in major industrial and regional groups. It was pointed out in the article that the data now published on car loadings are classified in such manner, particularly in the case of the groups merchandise and miscellaneous, that they do not admit of specific analysis of important industrial sub-groups.

It is the purpose of the present study to examine the recently constructed indexes of agricultural movements, of the Federal Reserve Board, with a view to ascertaining whether they tend to confirm conclusions already suggested by the car loadings figures and whether they afford information supplementary to that yielded by the published data on car loadings.

The Index of Agricultural Movements

The index of agricultural movements was presented on pages 183-7 of the Federal Reserve Bulletin for March,

loadings of grain and grain products, both curves having been corrected for seasonal variation.³ The remarkable similarity in the shape and timing of the fluctuations appears at once. Here also, as in the case of the seasonal variations, the fluctuations are more extensive for the movements of grains; and this is probably ascribable to the same cause as in the case of the seasonal indexes.

Livestock

The lower figure of Chart 2 exhibits a corresponding comparison for livestock. Here the similarity is even more pronounced: Throughout their entire sweep the two curves move closely together, and confirm each other, even in most of the minor variations.

The conclusion to be drawn from Charts 1 and 2 is that the fluctuations shown by the indexes of agricultural movements and the car loadings data are substantially similar, in respect both of seasonal variation and of the cyclical

of inevitable difficulties in securing data for their construction or in analyzing their fluctuations, give less accurate pictures than was the case for livestock and grains. Nevertheless, with all reasonable allowance on this account, it appears that much can be learned from the data for these other groups.

For this purpose an analysis is now given of the total index of agricultural movements, and of the indexes for Groups II, IV, V. The remaining groups were not analyzed, partly because of unusual difficulties involved in the determination of their seasonal variations, and partly because their weights (see Table 1) are so small that they are relatively unimportant in a study of this sort.

Cotton

The seasonal indexes for the total and for Groups IV (Cotton), II (Animal Products) and V (Vegetables) are shown in Table 3 and by figures E, F, G, H, respectively,

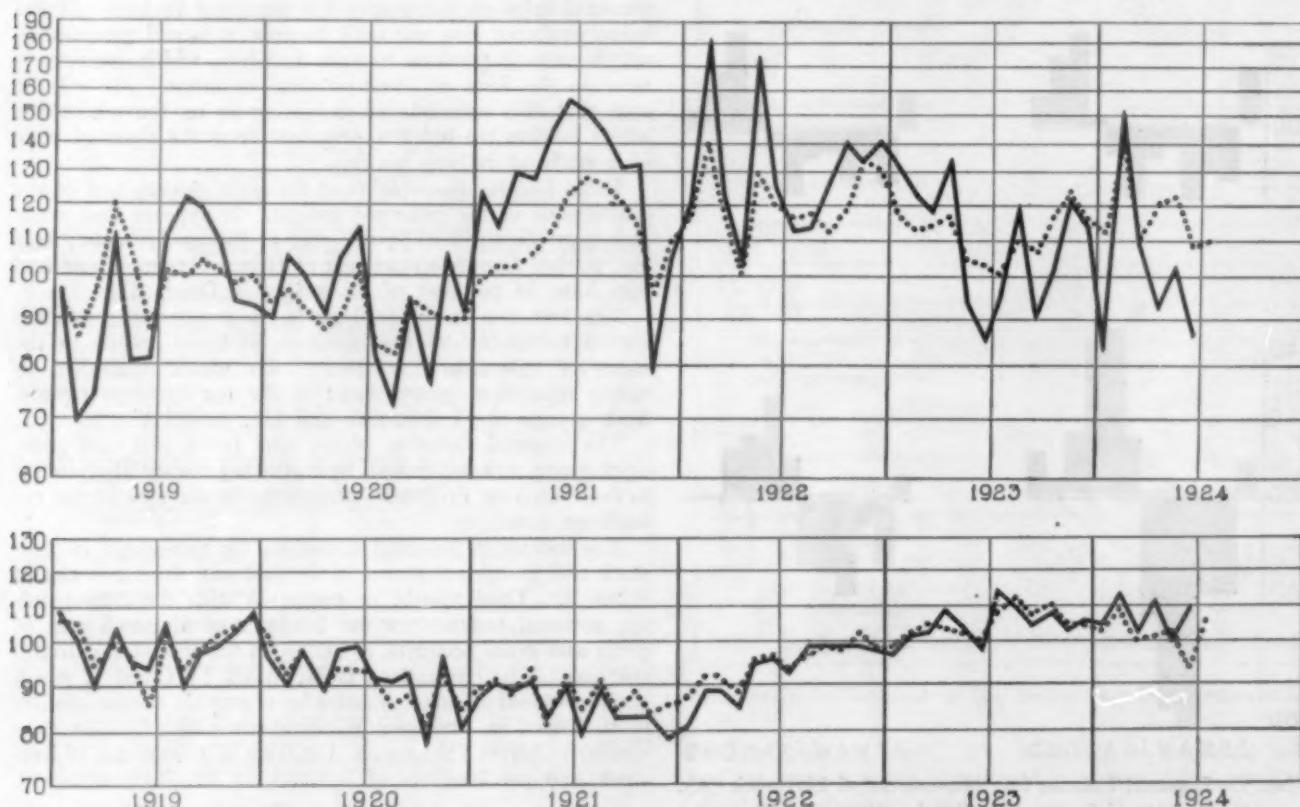


Chart 2—Upper Figure Compares Movements of Grains (Full Line) with Car Loadings of Grain and Grain Products (Dotted Line). Lower Figure Compares Movements of Livestock (Full Line) with Car Loadings of Livestock (Dotted Line)

swings over an interval of many months. The fact that these two different methods of measurement of two different aspects of the same phenomenon—the transportation of commodities to market—confirm each other in this striking manner strengthens our confidence in the adequacy of both methods of measurement.

This observation suggests the further conclusion that we may fairly gain satisfactory measures of transportation activity from those other indexes of agricultural movements for which no equivalent car loadings data are available. Too much, of course, should not be taken for granted in this direction: The possibility should not be overlooked that the other group indexes of agricultural movements may, because

of Chart 3. Except in the case of cotton, these seasonal indexes are considered very satisfactory measures of the normal seasonal swing.⁴ The data for movements of cotton suggest that a monthly determination of seasonal swings in this case is likely to be misleading.

The point is that the peak of the seasonal expansion in cotton deliveries comes in different months in different years. Consequently the available methods of measuring seasonality,

³ The correction, for the curve of agricultural movements, consists in dividing the index for a given month, as published in the *Bulletin*, by the seasonal index for that month and expressing the result as a percentage. Thus, for June, 1924, $67 \div 77 = 87$ per cent. A similar procedure was followed in the case of car loadings.

⁴ In the presentation in the *Bulletin* it is remarked (P. 186, *loc. cit.*) that one of the reasons for not correcting the indexes of agricultural movements for seasonal variation is that "many series of statistics included have not been available for a sufficient length of time to make possible an accurate measurement of seasonal changes." It is however possible that the seasonal variation of a group index may be determinable although the seasonal variations in the constituents of the group are not yet subject to accurate determination. Careful examination of each case has led to the conclusion that the seasonal indexes here presented are fairly reliable, with the single exception noted. A tentative estimate of the order of excellence, from the point of view of reliability, would be as follows: Animal Products, Livestock, Total, Vegetables, Grains, Cotton.

which in effect merely measure an average, over several years, of the seasonal swing, do not catch all of the fall bulge or spring dip in any year. The resulting seasonal index is therefore very faulty. It should not, however, be discarded, for it does measure the major part of the swing, and therefore does enable us to make a *partial* correction of the original items. The effect of this partial elimination of seasonal variation is seen in the lower figure of Chart 4. In this

left, in one year as compared with another, can be explained on several grounds. Among the most important are: The moderate changes from year to year in weather conditions; the slight shifting—now earlier, now later—of the time of picking; the varying interval between picking and delivery to marketing center; the differing transportation conditions. These and minor causes operate to produce a wavering of the cotton seasonal movement about its average. A similar, but less pronounced, phenomenon might be expected to appear in the case of the great grain crops. Careful examination of the full-line curve of Chart 2 (upper figure) reveals the same tendency, but it is much more moderate than in the case of cotton. The relative unimportance of this difficulty in the grains index is probably due to two facts: the averaging together of several grains tends to minimize the irregularities in each, and the physical causes mentioned above probably have less effect on any one grain than on cotton.

The upper figure of Chart 4 shows the corrected series for the total index, and Chart 5 shows corrected curves for animal products (upper figure) and vegetables (lower figure).

Recent Trends

Examination of Charts 2, 4 and 5 indicates the following facts concerning recent cyclical fluctuations in agricultural movements. Total movements experienced a brief recession

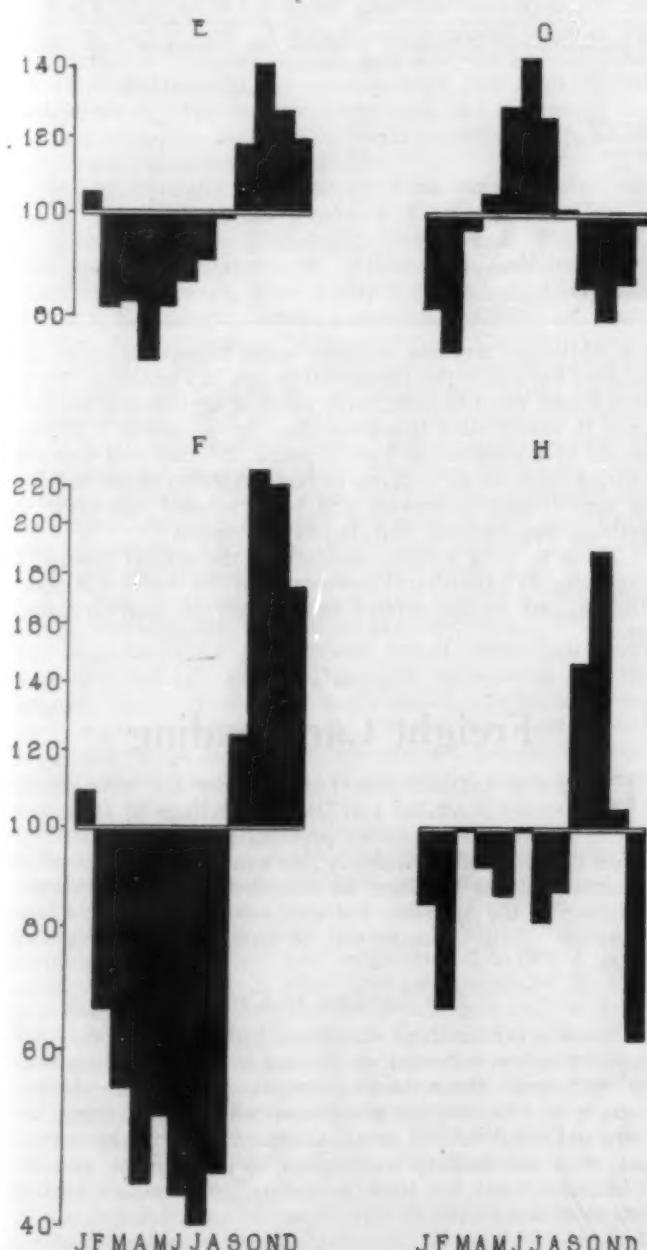


Chart 3—Seasonal Indexes for Movements of: Total Agricultural (E), Cotton (F), Animal Products (G), and Vegetables (H)

curve, which purports to show the movements of cotton with seasonal variation eliminated, the elimination is really inadequate. In each year there is a swing which is obviously seasonal in nature; but it should be remarked that this fluctuation differs notably in different years, and that is the reason why the standard method of measuring seasonality failed to catch it.

This shifting of the seasonal bulge and dip to right or

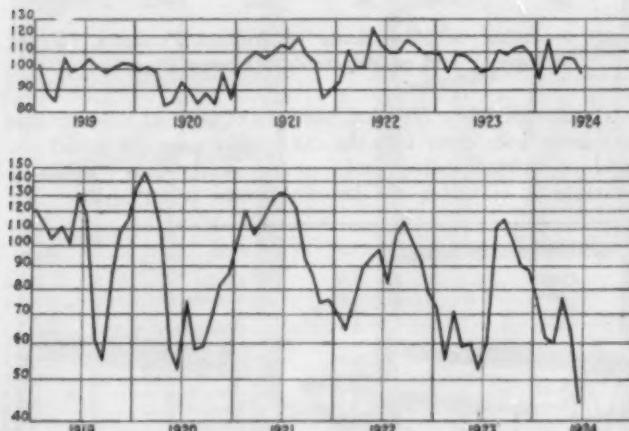


Chart 4—Index of Total Agricultural Movements (Upper Figure), and of Cotton Movements (Lower Figure)

early in 1919, then recovered sharply. They fell in the second quarter of 1920 to a low level, from which there was no recovery until the beginning of 1921. Since then, except for a brief recession at the end of 1921, they have remained almost constantly well above the 1919 average.

Livestock movements declined, with slight interruption, from the beginning of 1919 to the end of 1920. They remained at the low level then reached for over a year, but recovered sharply during the first half of 1922, and have remained at or above the 1919 average throughout the past twelve months.

Movements of animal products declined continuously from early 1919 to a low point in the second quarter of 1920. Since then the recovery has been strong and well-sustained, and during the past one and one-half years the average of such movements has been about 15 per cent above the 1919 level.

Grain movements experienced neither marked expansion nor serious decline in 1919 and 1920, but in 1921 and 1922 they were considerably above the 1919 average. In more recent months they have fallen off to levels not much different from those of 1919.

With the exception of 1921, when total shipments appear to have averaged well above 100 per cent of the 1919 average,

cotton movements have declined almost continuously in recent years. For reasons discussed above, it is impossible to make any satisfactory comment on the minor fluctuations of the curve for cotton.

Movements of vegetables have been subject to cyclical changes closely similar to those noted for animal products. In the case of vegetables, the levels reached in 1923-24 are even higher, compared with 1919, than in the case of ani-

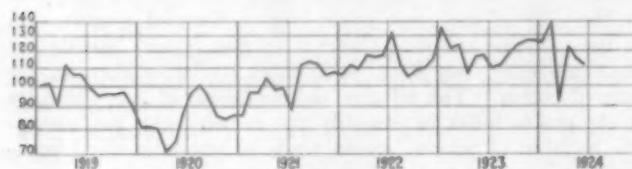


Chart 5—Index of Movements of Animal Products (Upper Figure), and of Vegetables (Lower Figure)

mal products. The fact that portions of both of these groups of commodities enter into the car loadings figures under the head of "merchandise, l.c.l., and miscellaneous" probably accounts in part for the heavy upward trend of such car

I.—Livestock	20.0	IV.—Cotton	20.0
Cattle	9.0	Cotton	17.0
Calves	1.0	Cottonseed	3.0
Hogs	8.5		
Sheep	1.5		
II.—Animal products	20.0	V.—Vegetables	5.0
Butter	9.5	White potatoes	3.7
Cheese	1.5	Sweet potatoes . . . . .	.5
Eggs	5.0	Tomatoes . . . . .	.4
Poultry	3.0	Onions . . . . .	.2
Wool	1.0	Cabbages . . . . .	.2
III.—Grains	25.0	VI.—Fruits	4.0
Wheat	15.0	VII.—Tobacco	3.5
Corn	6.0	VIII.—Miscellaneous	2.5
Oats	2.0	Total weight	100.0
Barley . . . . .	.6		
Rye . . . . .	.6		
Rice . . . . .	.8		

loadings in recent years (see Chart 7 of Professor Vanderblue's article).

Purchasing Power More Important Than Volume

A summary of the observed cyclical fluctuations in these agricultural movements would emphasize their dissimilarity from the corresponding fluctuations in general business conditions. Early 1920 was marked by feverish business activi-

ty, but the same period saw only horizontal or declining tendencies in agricultural deliveries. On the other hand 1921, which witnessed the extreme of business depression, was a year of expanding agricultural movements. It is easy to be misled by such observations. Large marketings of perishable and bulk commodities do not spell prosperity if prices are unfavorable. Although the carriers secure large revenues from the transportation of great volumes of these basic farm commodities, their real prosperity depends upon

TABLE 3.—INDEXES OF SEASONAL VARIATION, FOR INDEXES OF AGRICULTURAL MOVEMENTS

	Total	Animal products	Cotton	Vegetables
January	105	81	109	84
February	81	73	66	67
March	82	97	55	100
April	72	105	44	92
May	81	128	52	86
June	86	143	43	100
July	90	125	40	81
August	99	101	45	87
September	117	85	124	146
October	141	78	228	190
November	127	86	220	105
December	119	98	174	62

the additional revenues incident to the transportation of the articles for which the farmer exchanges his produce. From this second point of view, large *value* of agricultural marketings is vastly more important than large *volume*. If this aspect of the matter be kept in mind, it is believed that the current study of such charts as here presented of the indexes of agricultural movements will be of interest and profit to railway management and railway investors.

Table 1. The weights assigned to the several groups in the index of agricultural movements of the Federal Reserve Board, and to the several constituents of each principal group.

Freight Car Loading

R EVENUE FREIGHT CAR LOADINGS for the week ended October 4 totaled 1,077,006. Loadings of grain and merchandise broke all previous records. At the time when this issue of the *Railway Age* went to press the detailed summary of car loadings, as compiled by the Car Service Division of the American Railway Association, had not been received. This summary will be published in next week's issue.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended October 4 showed an increase over the previous week of 982 cars. Grain loading was up 1,224 cars; car was heavier by 849 cars, but miscellaneous freight was down 504 cars and ore down 691 cars. Compared with the same week last year the loading was lighter by 4,620 cars, and the cumulative total for 1924 is now only one week's loading ahead of that of 1923.

Commodity—	For the week ended—1924		
	Sept. 20. Cars	Sept. 27. Cars	Oct. 4. Cars
Total for Canada			
Grain and grain products	11,190	15,683	16,907
Live stock	2,776	2,597	2,563
Coal	7,000	6,050	6,899
Coke	204	219	247
Lumber	3,593	3,559	3,647
Pulp wood	1,557	1,379	1,395
Pulp and paper	1,960	1,856	1,751
Other forest products	2,197	2,034	2,141
Ore	1,260	1,693	1,002
Merchandise L. C. L.	16,049	16,075	16,079
Miscellaneous	15,280	14,637	14,133
Total cars loaded	63,066	65,782	66,764
Total cars received from connections	31,174	31,799	32,155
Total cars loaded for corresponding week, 1923	68,705	70,437	71,384
Cumulative loading to date—1924 . . . . .	.....	.....	2,151,702
Cumulative loading to date—1923 . . . . .	.....	.....	2,085,649

TABLE 2.—INDEXES OF SEASONAL VARIATION

	Livestock movements	Livestock car loadings	Grain movements	Grain and grain products car loadings
January	115	109	108	106
February	88	88	80	86
March	90	93	80	94
April	85	89	58	80
May	96	95	62	84
June	93	93	77	86
July	86	86	114	110
August	94	96	147	126
September	102	107	143	116
October	125	125	116	112
November	118	114	104	100
December	108	105	111	100

Tentative Valuation, Penna. Co.

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION'S tentative valuation report on the Pennsylvania Company and its leased lines, as of June 30, 1916, made public on October 8, shows a final value for rate-making purposes, as of that date, of the common carrier property owned of \$30,135,000 and of that used of \$284,676,670, which includes \$254,273,470 for leased lines used and \$268,200 for property jointly used. The outstanding capitalization of the Pennsylvania Company on valuation date was \$200,253,081, of which \$80,000,000 was common stock and \$120,253,081 funded debt. The investment in road and equipment, including land, was stated in the books as \$27,293,556, which the report readjusts to \$27,821,124.

The report covers the properties of the Pennsylvania Company; Pittsburgh, Fort Wayne & Chicago; Massillon & Cleveland; Erie & Pittsburgh; Cleveland & Pittsburgh; Pittsburgh, Youngstown & Ashtabula; Youngstown & Ravenna; Pittsburgh, Ohio Valley & Cincinnati; Cleveland, Akron & Cincinnati; Toledo, Columbus & Ohio; and South Chicago & Southern. The Pennsylvania Company owned no railroad in fee. The common carrier property owned by it consisted of equipment and machinery, lands, and a freight station and 1.013 miles of yard tracks and sidings at St. Louis. It operated, under lease or under contract or agreement, the properties of the ten other companies, comprising a network of main lines and branches between Pittsburgh and Chicago, a total of 1,678 miles of first main track wholly used and 1.02 miles jointly used, and 4,312 miles of all tracks wholly used and 23.46 miles jointly used.

The cost of reproduction new and cost of reproduction less depreciation are reported as \$32,808,380 and \$22,802,442 respectively for the property owned, other than land; and \$269,605,437 and \$207,246,608 respectively for the property used. The carrier lands owned, 179.56 acres, are given a present value of \$1,302,175 and those used, 22,633 acres and 6,364 linear feet, are given a present value of \$65,945,491. The 719 acres of non-carrier lands are given a present value of \$3,008,803.

The investment in miscellaneous physical property is given as \$3,555,763 and the company owned securities of other companies, mainly affiliated companies, classified as held for non-carrier purposes, of a par value of \$250,421,507 and a book value of \$204,866,009, in addition to \$4,868,500 par value and \$4,779,292 book value of investments in other companies acquired through a reserve fund. The company owned and held cash on hand and materials and supplies in the amount of \$13,768,965, of which \$5,135,000 is held as necessary for use as working capital and included in the final value, while the remainder is classified as held for non-carrier purposes.

The final value found includes \$124,000,000 for the property owned by the Pittsburgh, Fort Wayne & Chicago, the principal of the leased lines; also \$50,850,000 for that of the Cleveland & Pittsburgh; \$25,500,000 for that of the Pittsburgh, Youngstown & Ashtabula; \$19,000,000 for that of the Cleveland, Akron & Cincinnati; \$21,500,000 for that of the Toledo, Columbus & Ohio River; and smaller amounts for that of the other companies.

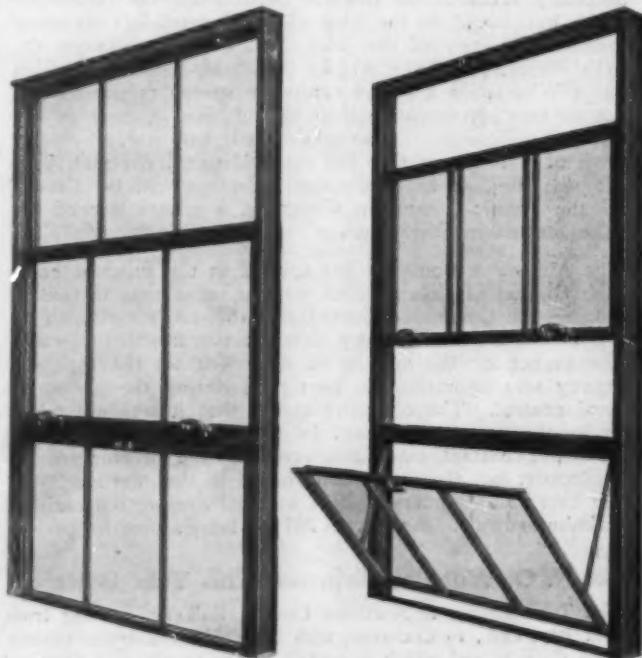
The entire stock of the Pennsylvania Company, now no longer an operating company, was owned by the Pennsylvania Railroad. The Pennsylvania Company itself controlled through stock ownership eight of the ten companies whose properties it operated on valuation date.

The commission has previously issued tentative reports on the Pittsburgh, Cincinnati, Chicago & St. Louis; the Grand Rapids & Indiana; the Vandalia; and other parts of the Pennsylvania system, but has not yet issued its report on the Pennsylvania Railroad.

Modified Window Construction for Southern's New Building

THIS SOUTHERN is erecting a ten-story general office building for its Lines West, at Birmingham, Ala., in connection with which a style of window has been adopted which presents what is believed to be a new departure in this detail of building construction. All of the windows consist of steel sash divided into three horizontal sections, the two upper sections being counterbalanced one against the other so that when the lower section of the two is raised, the top section drops down an equal distance, while the lower section of the sash, which is 18 in. high, is hinged at the lower edge so as to open inwardly as shown in the illustration.

This type of window, which consists essentially of a combination of the previous developed counterbalanced window sash with the familiar ventilator sash, was adopted chiefly to meet a problem of providing a fire proof sash in such a form as to fit more agreeably into the architectural treatment of a general office building than the type of sash used in factory construction. The sill of the window is



Views of the New Windows Open and Closed

approximately at the height of the desk but with the inwardly opening ventilator sash at the bottom the occupants of the building can secure ventilation in even rainy or windy weather without any annoyance from a direct draft or the necessity of opening the top sash while the arrangement and location of the upper windows is such as to permit a free circulation of air above the heads of the building occupants during weather when it is desirable to have the windows open, without the likelihood or danger of papers being blown from the desk. The counterbalancing is also advantageous in obviating the necessity of moving more than one of the two counterbalanced sashes to open the window from top and bottom. Being constructed entirely of steel, the windows are fireproof and the slender sections allow about 30 to 40 per cent more daylight than wood windows for the same size openings. This sash is being manufactured for the Southern by the Truscon Steel Company, Youngstown, O., and is being erected, together with other portions of the building, under the supervision of J. B. Munson, vice-president at Cincinnati, O.

General News Department

The American Railway Association will hold its regular session at the Yale Club, Vanderbilt avenue, New York City, on Wednesday morning, November 19. There will be reports from the Car Service Division and the Freight Container Bureau. The Association of Railway Executives will meet at the same place in the afternoon.

Near Clover, Pa., on the Cambria & Indiana Railroad on the morning of October 11, passenger train No. 12 was stopped by robbers who carried off in their automobile a safe containing \$33,000, money being sent to the Colver mines of the Ebensburg Coal Company; and James Garman, express messenger or guard, was killed. One other man was wounded. The robbers numbered five, and were not masked. Several bullets were fired among the passengers on the train.

Secretary Work of the Interior Department has announced that he has found in the files of the Interstate Commerce Commission a copy of the joint tariff contract between the Alaska Railroad and the Alaska Steamship Company which Senator Wheeler in a recent campaign speech referred to as a "secret rate agreement" and as having been "discovered" by Senator La Follette. Secretary Work had not previously known of it but says that the same identical contract, both as to wording and as to divisions of rates, had been made with the Pacific Steamship Company, a competitor of the Alaska Steamship Company.

The Abilene & Southern has applied to the supreme court of the District of Columbia for writ of mandamus to compel the Interstate Commerce Commission to issue a certificate to the Secretary of the Treasury under section 204 of the transportation act for the amount of its deficit for the time the company was operating its own road during the period of federal control. The company claims that it was not taken over by the government until July 1, 1918, and that date is used in the contract, made afterward with the director general of railroads; but the commission has held that the road was taken over as of January 1, 1918, and is therefore not entitled to reimbursement under section 204 for the six months' period.

T. & N. O. Will Pay Expenses This Year Is Report

The Temiskaming & Northern Ontario Railway, running from North Bay, Ont., to Cochrane, with branch lines into the various mining districts and which is owned by the province of Ontario, will this year show a balance on the right side of the ledger, according to Lt. Col. L. T. Martin, of Ottawa, one of the directors of that road. The fiscal year of the railway ends on October 31 next. All the construction that was planned last spring for this season has been completed; trains on the new Lorrain and Kirkland Lake branches will be running by November 1; and the rolling

stock and roadbed have been materially improved. A steady increase in the output of the gold and silver mines in Northern Ontario has contributed greatly to the prosperity of the provincial railway.

Chicago Car Foremen Elect Officers

At the annual meeting of the Car Foremen's Association of Chicago, held at the Hotel Morrison on Monday evening, October 13, the following officers were elected for the year 1924-25: President, Alfred Herbster, district general foreman, New York Central, Chicago, Ill.; first vice-president, J. E. Mehan, assistant master car builder, Chicago, Milwaukee & St. Paul, Milwaukee, Wis.; second vice-president, E. H. Wood, car foreman, Michigan Central, Chicago. F. C. Schultz, chief interchange inspector, Chicago Car Interchange Bureau, was re-elected treasurer. Aaron Kline, who has served the association faithfully as a secretary for 25 years, was also re-elected to the position of secretary.

Rock Island Urges Voting

The Chicago, Rock Island & Pacific has adopted a plan of urging its employees and patrons to vote in the coming election by disseminating information concerning the political situation and by placing posters throughout the system as reminders. The company has distributed a pamphlet called "The Present Legislative and Political Situation as Affecting the Railroads," in which it describes the legislative situation and the Howell-Barkley bill; explains railway operating expenses, the "black-listed" congressmen, and other anti-railway bills, and reviews the farmer's interests, the Pullman surcharge and "the bug under the ship."

The railroad suggests that as many influential citizens should be interviewed as practicable. The opportunity should be taken to make talks at public meetings, luncheons, etc., when possible.

The poster says: "Register, Vote! Don't be a Parlor Patriot, Don't be a Rocking Chair Paul Revere."

Rock Island Celebrates Seventy-Second Anniversary

The seventy-second anniversary of the Chicago, Rock Island & Pacific was celebrated at Chicago on October 10 and 11 by officers and employees, including 500 pensioned employees. On October 10 the pensioned employees were entertained at a special performance at one of the Chicago theatres, after which they attended a luncheon given in their honor in the Gold Room of the Congress Hotel. At the luncheon addresses were made by President James E. Gorman, Vice-President Carl Nyquist, chairman of the pension board, and Hal S. Ray, director of personnel and public relations. John F. Lacey, retired locomotive engineer, responded to the official addresses in behalf of the veterans.

The annual anniversary dinner was held in the evening in the Red Room of the Hotel LaSalle under the auspices of the Rock



Entrants in Rock Island Tournament

Island Railway Club of Chicago, of which W. E. Bolton is president. This dinner was attended by the 250 members of the club, officers of the railway company and invited guests. Talks were made by President James E. Gorman, Vice-President M. L. Bell, of New York, and other officers.

On October 11 the anniversary athletic tournament was held at Calumet Park, Chicago, and was participated in by employees from the entire system. The event was attended by 3,000 people and three special trains were run from Chicago to the park. Those entered in the meet totalled 158 and were chosen by previous elimination contests held throughout the system in which 1,000 people participated. The contest was divided between representatives of the first and second districts. The contest consisted of swimming, bowling, track and field events, baseball, soccer, tennis, horseshoe pitching, checkers, and musical events. The Chicago Terminal division, whose accredited representatives of the tournament won 68 points of the total of 291 in the various

events, was awarded a banner and the first district which won 175 points was awarded the anniversary tournament supremacy banner.

Gold, silver and bronze medals were awarded to individual winners of events and silver cups were awarded to winning teams. The musical events consisted of a contest between the Silvis shop band and the Horton, Kans., band, and a prize of a silver cup was awarded the Silvis, Ill., band for the rendition of the "Rock Islander."

Following the tournament the contestants, officers and invited guests attended a dinner in the gymnasium of the Calumet Park field house at which an address was made by Joseph E. Hitt, former president of the Athletic Association, who spoke on the value of athletics in a railroad organization. Following the dinner, the business men of South Chicago gave a display in fireworks in honor of the tournament. A dance for the employees and their families was held in the field house in the evening.

OPERATING REVENUES AND OPERATING EXPENSES OF CLASS I STEAM ROADS IN THE UNITED STATES

(For 194 Steam Roads, Including 16 Switching and Terminal Companies)

For the Month of August, 1924 and 1923

Item	United States		Eastern District		Pocahontas Region		Southern Region		Western District	
	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923
Average number of miles operated ...	236,132.32	235,736.25	59,509.02	59,347.67	5,458.84	5,449.49	38,354.33	38,449.81	132,610.13	132,489.28
Revenues:										
Freight	\$358,423,626	\$402,099,701	\$152,945,630	\$186,886,250	\$16,783,602	\$17,266,760	\$45,128,174	\$46,889,362	\$143,566,220	\$151,057,329
Passenger	a104,519,203	b112,966,225	53,880,216	56,698,476	2,333,255	2,607,766	12,777,216	13,957,387	35,528,516	39,662,596
Mail	7,814,694	7,550,896	2,953,028	2,779,439	187,795	188,702	1,079,574	1,090,401	3,594,297	3,492,354
Express	10,176,739	11,399,783	4,361,086	5,079,656	231,539	267,539	1,127,129	1,411,817	4,456,986	4,640,771
All other transp'n.	16,367,400	17,465,661	9,375,185	10,348,010	199,538	204,376	848,093	883,438	5,944,584	6,029,837
Incidental	10,568,715	12,460,470	5,236,571	6,535,173	331,903	378,348	920,758	1,014,353	4,079,483	4,532,596
Joint facility—Cr..	744,994	815,505	339,495	372,592	16,528	16,293	118,163	99,354	270,808	327,266
Joint facility—Dr..	221,094	229,350	103,879	126,338	2,116	1,817	31,984	34,996	83,115	66,199
Ry. operat'g revs.	508,394,277	564,528,891	228,987,332	268,573,258	20,082,043	20,927,967	61,967,123	65,351,116	197,357,779	209,676,550
Expenses:										
Maintenance of way and structures...	73,089,234	80,835,583	29,861,681	35,033,223	3,061,078	2,641,905	9,144,182	10,450,950	31,022,393	32,709,505
Maint. of equipm't	161,466,767	127,645,093	45,772,587	63,880,505	5,144,951	5,657,008	12,955,008	15,367,252	36,594,221	42,740,328
Traffic	8,142,465	7,876,322	3,123,447	2,990,870	226,184	183,097	1,385,025	1,342,756	3,407,809	3,359,599
Transportation ...	173,750,554	194,122,539	81,468,089	93,836,057	5,645,409	6,514,526	21,608,662	23,601,247	65,028,394	70,170,709
Miscel. operations...	4,499,137	4,581,695	2,059,377	2,111,593	90,163	79,105	348,278	358,135	2,011,319	2,032,862
General	13,831,925	13,568,085	6,177,041	6,061,710	433,887	403,652	1,828,799	1,791,715	5,392,198	5,311,008
Transportation for investment—Cr..	i,180,872	1,176,096	138,329	216,652	41,300	32,475	92,896	100,081	908,347	826,888
Ry. operat'g exps.	373,599,310	427,453,221	169,323,893	203,697,306	14,550,372	15,446,818	47,177,058	52,811,974	142,547,987	155,497,123
Net revenue from railway operations.	134,794,967	137,075,670	169,323,893	203,697,306	5,531,671	5,481,149	14,790,065	12,539,142	54,809,792	54,179,427
Railway tax accruals	30,619,658	29,670,110	13,006,819	13,690,561	1,214,671	1,016,486	3,812,781	3,365,324	12,585,387	11,597,739
Uncollectible railway revenues	169,271	133,105	71,586	54,830	8,495	2,983	17,690	24,066	71,500	51,226
Ry. operat'g income	104,006,038	107,272,455	46,585,034	51,130,561	4,308,505	4,461,680	10,959,594	9,149,752	42,152,905	42,530,462
Equipment rents—Dr.										
balance	6,441,379	6,206,290	3,526,528	2,647,460	d401,376	d315,721	d110,518	99,112	3,426,747	3,775,439
Joint facility rent—										
Dr. balance	2,149,338	2,132,111	1,165,115	1,229,528	102,461	116,784	122,759	97,570	759,003	688,229
Net railway operating income...	95,415,321	98,934,054	41,893,391	47,253,573	4,607,422	4,660,617	10,947,353	8,953,070	37,967,155	38,066,794
Ratio of expenses to revenues (per cent)	73.49	75.72	73.94	75.84	72.45	73.81	76.13	80.81	72.23	74.16
Average number of miles operated ...	236,023.77	235,773.06	59,496.68	59,316.28	5,459.47	5,448.72	38,355.71	38,442.03	132,711.91	132,566.03
Revenues:										
Freight	\$2,766,823,292	\$3,053,107,253	\$1,248,342,959	\$1,455,005,115	\$125,930,086	\$125,889,654	\$377,725,464	\$395,391,842	\$1,014,824,783	\$1,076,820,642
Passenger	c730,901,032	e759,635,349	355,018,376	364,260,703	16,741,352	17,828,205	100,105,952	103,731,083	259,035,352	273,815,358
Mail	63,857,591	60,436,816	24,480,165	22,348,891	1,581,140	1,439,417	9,021,028	8,678,829	28,775,258	27,969,679
Express	90,778,097	100,442,044	40,128,774	46,771,615	2,057,982	2,294,648	12,458,228	12,500,441	36,133,113	38,875,340
All other transp'n.	126,179,928	132,450,504	72,790,493	78,627,922	1,464,656	1,489,617	7,048,086	7,307,649	44,875,973	45,025,316
Incidental	78,015,218	88,686,837	39,787,783	48,091,867	2,705,121	2,880,133	8,547,690	8,808,229	26,974,624	28,906,608
Joint facility—Cr..	6,883,804	6,615,231	2,833,388	3,006,418	119,259	115,363	1,031,271	1,050,055	2,899,883	2,443,395
Joint facility—Dr..	1,705,153	1,784,262	844,339	932,892	18,007	28,336	244,210	257,180	598,597	565,854
Ry. operat'g revs.	3,861,733,809	4,199,589,772	1,782,537,599	2,017,179,639	150,581,589	151,908,701	515,694,232	537,210,948	1,412,920,389	1,493,290,484
Expenses:										
Maintenance of way and structures...	528,781,257	533,129,038	216,516,139	224,870,271	22,105,727	18,369,258	72,761,377	74,376,112	217,398,014	215,513,397
Maint. of equipm't	843,097,883	980,859,475	402,882,817	489,922,280	37,578,248	39,430,551	106,282,556	115,976,407	296,354,232	335,530,237
Traffic	65,698,985	61,721,188	24,681,272	22,858,919	1,657,743	1,499,591	11,442,250	11,065,567	27,916,820	26,297,111
Transportation ...	1,442,510,771	1,577,82,069	688,985,808	772,014,605	47,228,970	50,323,849	188,708,891	199,294,731	517,587,102	556,187,484
Miscel. operations...	33,340,419	33,628,486	15,858,715	16,333,671	678,995	664,704	3,302,101	3,134,129	13,500,608	13,495,982
General	112,671,349	107,503,019	49,795,170	47,972,995	3,526,047	3,238,102	14,600,139	14,080,808	44,749,993	42,211,114
Transportation for investment—Cr..	8,758,201	6,642,903	1,264,064	769,546	250,038	149,812	1,013,472	782,782	6,230,627	4,940,763
Ry. operat'g exps.	3,017,341,563	3,288,018,972	1,397,455,857	1,573,203,195	112,525,692	113,376,243	396,083,872	417,144,972	1,111,276,142	1,184,294,562
Net revenue from railway operations.	844,392,246	911,570,800	385,081,742	443,976,444	38,055,897	38,512,458	119,610,360	120,065,976	301,644,247	308,995,922
Railway tax accruals	221,181,669	221,071,587	91,905,979	93,100,771	9,509,926	7,757,723	27,387,319	26,636,677	92,378,445	91,576,716
Uncollectible railway revenues	1,409,145	1,060,152	652,557	478,737	32,190	53,627	132,986	103,149	591,412	424,639
Ry. operat'g income	621,801,432	691,438,761	292,523,206	350,396,936	28,513,781	30,721,108	92,090,055	93,326,150	208,674,390	216,994,567
Equipment rents—Dr.										
balance	46,531,073	46,007,008	30,362,416	32,026,358	d2,592,910	d3,487,783	3,277,241	6,047,600	15,484,326	11,420,833
Joint facility rent—										
Dr. balance	14,211,004	14,716,207	7,119,505	7,744,181	812,441	947,017	843,842	700,732	5,435,216	5,324,277
Net railway operating income...	561,059,355	630,715,546	255,041,285	310,626,397	30,294,250	33,261,874	87,968,972	86,577,818	187,754,848	200,249,457
Ratio of expenses to revenues (per cent)	78.13	78.29	78.40	77.99	74.73	74.63	76.81	77.65	78.65	79.31

^a Includes \$3,537,871 sleeping and parlor car surcharge. ^b Includes \$3,487,435 sleeping and parlor car surcharge. ^c Deficit or other reverse items.

^d Includes \$24,514,237 sleeping and parlor car surcharge. ^e Includes \$24,051,128 sleeping and parlor car surcharge.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Freight Operating Statistics of Large Steam Roads—Selected Items for the Month of August,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Average number of locomotives on line daily			
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross, Excluding locomotive and tender	Net, Revenue and non-revenue	Servable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany.....	1924 394	241,545	257,037	26,447	4,793	67.8	248,429	97,466	122	21	14.7	...
Boston & Albany.....	1923 394	280,675	298,217	30,074	5,575	67.9	296,315	124,072	117	30	20.1	...
Boston & Maine.....	1924 2,455	498,376	566,815	54,772	11,978	71.1	598,576	249,113	310	149	32.4	34
Boston & Maine.....	1923 2,455	626,054	690,973	62,073	13,176	71.0	686,137	293,681	332	135	28.9	2
N. Y., New H. & Hartf.....	1924 1,957	471,282	496,582	28,637	12,243	68.1	629,838	258,126	308	65	17.4	36
N. Y., New H. & Hartf.....	1923 1,974	546,747	580,157	38,356	12,647	68.2	672,908	291,663	362	80	20.9	2
Great Lakes Region:												
Delaware & Hudson.....	1924 888	358,727	478,605	44,525	9,538	64.6	607,423	302,879	257	30	10.4	86
Delaware & Hudson.....	1923 886	420,129	585,901	52,539	11,390	65.6	754,536	395,282	233	64	21.4	15
Del., Lack. & Western.....	1924 993	514,662	592,399	78,284	16,274	70.1	898,681	402,495	298	66	18.2	45
Del., Lack. & Western.....	1923 993	541,864	661,445	102,171	16,683	69.1	925,864	423,641	279	67	19.3	4
Erie (inc. Chic. & Erie).....	1924 2,325	906,711	1,017,418	109,124	34,587	68.3	2,028,735	906,507	663	99	13.0	182
Erie (inc. Chic. & Erie).....	1923 2,309	1,050,727	1,179,800	85,364	37,052	69.5	2,248,503	1,080,363	695	127	15.4	122
Lehigh Valley.....	1924 1,357	555,116	608,436	60,483	16,611	67.1	980,609	457,583	475	73	13.4	138
Michigan Central.....	1924 1,827	537,468	549,983	18,877	17,901	63.4	969,012	361,680	305	55	15.2	94
Michigan Central.....	1923 1,827	538,038	541,266	18,662	18,338	68.4	965,042	398,578	329	64	16.3	58
New York Central.....	1924 6,447	1,820,478	2,056,261	136,229	67,252	64.9	3,984,667	1,749,514	1,244	429	25.6	463
New York Central.....	1923 6,469	2,246,452	2,563,108	187,252	82,360	64.7	4,968,113	2,304,604	1,368	375	21.3	357
New York, Chic. & St. L.	1924 1,669	624,176	638,733	6,180	19,351	66.1	1,050,564	415,230	251	54	17.7	66
New York, Chic. & St. L.	1923 1,669	710,121	719,866	4,659	20,162	69.2	1,077,023	457,560	208	78	27.2	7
Pere Marquette.....	1924 2,222	382,898	394,367	10,159	9,501	62.9	551,395	249,180	187	26	12.2	36
Pitts. & Lake Erie.....	1924 2,197	414,116	428,576	7,703	10,213	69.6	580,831	291,084	182	34	15.7	13
Pitts. & Lake Erie.....	1923 2,191	105,203	108,182	812	3,672	65.5	280,939	170,042	68	19	21.4	16
Wabash.....	1924 2,459	627,533	657,085	10,208	19,829	70.4	1,068,076	452,134	313	54	14.6	67
Wabash.....	1923 2,418	627,650	707,918	16,042	20,051	72.2	1,058,306	450,639	262	67	20.3	...
Central Eastern Region:												
Baltimore & Ohio.....	1924 5,207	1,778,658	2,026,859	156,277	51,180	65.3	3,139,734	1,525,075	974	309	24.1	170
Baltimore & Ohio.....	1923 5,212	2,227,372	2,566,434	170,338	60,205	64.9	3,860,480	1,976,098	1,102	189	14.6	81
Central of New Jersey.....	1924 692	282,009	307,189	33,560	6,798	60.1	448,417	212,767	235	43	15.6	37
Chicago & Eastern Ill.	1924 945	225,097	226,125	3,469	6,350	63.5	466,299	229,179	224	49	17.9	10
Chicago & Eastern Ill.	1923 945	239,285	240,050	4,564	6,322	68.3	368,223	176,471	128	35	21.3	51
Cleve., Cin., Chic. & St. L.	1924 2,380	643,670	691,492	14,981	21,245	63.6	1,321,565	626,808	359	93	20.5	71
Cleve., Cin., Chic. & St. L.	1923 2,377	731,482	762,902	9,162	23,171	65.1	1,456,840	724,204	342	107	23.7	46
Elgin, Joliet & Eastern ¹	1924 460	89,981	95,544	2,688	2,952	67.9	210,014	111,718	87	11	11.6	23
Elgin, Joliet & Eastern ¹	1923 460	136,960	149,263	6,791	4,041	65.2	310,191	169,701	81	19	19.0	1
Long Island.....	1924 393	44,068	46,138	6,941	556	58.2	34,401	13,295	41	15	26.2	4
Long Island.....	1923 393	50,724	62,641	10,430	709	60.1	42,642	17,211	39	15	27.8	...
Pennsylvania System.....	1924 10,942	4,277,737	4,607,535	324,626	121,369	64.9	7,853,181	3,754,414	2,692	869	24.4	397
Pennsylvania System.....	1923 10,907	5,249,011	5,733,599	437,603	141,756	64.2	9,644,432	4,886,906	2,851	607	17.3	53
Reading.....	1924 1,141	603,998	662,221	63,753	15,020	64.0	986,396	503,967	434	76	14.9	155
Reading.....	1923 1,142	722,763	804,398	84,436	18,452	65.0	1,243,087	672,035	345	110	24.1	41
Pocahontas Region:												
Chesapeake & Ohio.....	1924 2,555	1,040,006	1,107,291	36,114	32,380	58.3	2,552,067	1,794,318	439	93	17.5	12
Chesapeake & Ohio.....	1923 2,553	1,051,001	1,094,730	28,433	30,789	59.6	2,395,519	1,331,293	460	93	16.7	26
Norfolk & Western.....	1924 2,231	836,033	1,009,439	29,935	25,582	61.3	2,010,559	1,073,487	587	95	13.9	180
Norfolk & Western.....	1923 2,228	905,522	1,117,195	36,660	26,436	60.6	2,111,806	1,160,830	543	137	20.1	51
Southern Region:												
Atlantic Coast Line.....	1924 4,865	619,196	628,976	9,957	15,104	64.6	807,703	334,145	412	62	13.0	114
Atlantic Coast Line.....	1923 4,861	628,099	631,369	9,660	14,891	66.6	791,567	337,438	361	58	13.7	53
Central of Georgia.....	1924 1,907	313,863	315,726	5,659	6,715	69.9	355,423	158,954	137	20	12.5	15
Central of Georgia.....	1923 1,907	304,086	308,338	6,246	6,157	71.5	328,896	152,195	131	16	10.7	...
I. C. (inc. Y. & M. V.).....	1924 5,197	1,652,392	1,669,443	35,509	48,739	65.4	2,955,806	1,286,780	780	121	13.4	97
I. C. (inc. Y. & M. V.).....	1923 5,192	1,916,931	1,927,898	37,499	52,778	64.0	3,297,555	1,497,478	718	120	14.4	...
Louisville & Nashville.....	1924 5,026	1,628,276	1,725,437	62,833	31,808	63.3	2,019,598	990,985	610	116	15.9	54
Louisville & Nashville.....	1923 5,032	1,747,304	1,858,622	68,837	32,276	63.2	2,111,782	1,049,540	598	101	14.4	...
Seaboard Air Line.....	1924 3,547	458,957	470,896	5,730	10,790	66.4	579,042	234,795	214	47	17.8	20
Seaboard Air Line.....	1923 3,553	437,689	464,020	10,408	9,794	70.8	513,975	225,475	207	40	16.1	8
Southern Ry.....	1924 6,840	1,040,404	1,434,078	30,569	32,485	67.5	1,760,040	719,290	871	115	11.7	41
Southern Ry.....	1923 6,942	1,471,402	1,518,118	35,935	33,229	70.6	1,761,739	790,350	794	134	14.5	...
Northwestern Region:												
Chi., & North Western.....	1924 8,463	1,591,811	1,654,214	24,352	37,969	64.0	2,200,404	922,761	812	236	22.5	122
Chi., & North Western.....	1923 8,463	1,717,244	1,810,034	21,899	40,429	64.4	2,362,394	1,019,872	874	182	17.3	40
Chi., Milw. & St. P.	1924 10,983	1,551,359	1,606,238	67,893	44,329	65.5	2,516,581	1,110,648	945	160	14.5	142
Chi., Milw. & St. P.	1923 10,907	1,775,708	1,826,149	70,766	46,076	66.5	2,550,127	1,445,590	874	172	16.4	43
Chi., St. P., Minn. & Om.	1924 1,726	334,282	364,352	14,558	6,590	68.0	372,340	157,871	167	38	18.6	1
Great Northern.....	1924 8,251	807,232	827,903	40,351	27,098	62.7	1,650,509	781,336	591	156	20.9	113
Great Northern.....	1923 8,255	1,079,511	1,118,078	48,934	30,339	55.1	2,064,451	959,233	593	134	18.4	87
M., St. P. & S. Ste. M.	1924 4,374	494,481	505,154	7,221	12,101	69.8	625,677	279,951	291	52	15.2	12
M., St. P. & S. Ste. M.	1923 4,374	576,741	584,859	9,185	13,351	70.1	723,623	350,56				

1924, Compared with August, 1923, for Roads with Operating Revenues above \$25,000,000

Region, road and year	Average number of freight cars on line daily					Gross tons per train, excluding locomotive and tender	Net tons per train	Net ton- miles per car-day	Car miles per car-day	Net ton- miles per road per day	Pounds of coal per 1,000 gross ton-miles including locomotive and tender	Locome- tive miles per road per day		
	Home	Foreign	Total	Per cent un- service- able	Stored									
New England Region:														
Boston & Albany.....	1924	2,746	4,754	7,500	5.2	...	1,028	403	20.3	419	30.4	7,981	189	63.7
	1923	2,043	6,332	8,375	3.7	...	1,056	442	22.3	478	31.6	10,160	183	72.1
Boston & Maine.....	1924	14,911	13,749	28,660	12.6	...	1,201	500	20.8	280	19.0	3,273	132	43.6
N. Y., New H. & Hartf.	1924	21,693	15,851	37,544	21.8	704	1,336	548	21.1	222	15.4	4,254	130	45.5
	1923	20,352	18,008	38,360	19.9	...	1,231	533	23.1	245	15.6	4,766	151	52.3
Great Lakes Region:														
Delaware & Hudson.....	1924	9,588	5,442	15,030	7.0	...	1,593	844	31.8	650	31.7	11,003	168	58.8
	1923	8,962	8,782	17,744	7.6	...	1,796	941	34.7	719	31.5	14,386	187	69.6
Del., Lack. & Western....	1924	18,887	7,322	26,209	4.7	670	1,746	782	24.7	495	28.6	13,081	152	59.5
Eric (inc. Chic. & Erie)	1924	38,233	18,280	56,513	7.1	12,751	2,237	1,000	26.2	517	28.9	12,578	119	47.7
	1923	25,574	26,317	51,891	9.6	...	2,140	1,028	29.2	672	33.1	15,091	124	49.6
Lehigh Valley	1924	23,247	8,276	31,523	7.0	1,109	1,766	824	27.5	468	25.3	10,881	133	39.4
	1923	19,919	12,418	32,337	5.5	129	1,726	873	29.7	521	24.6	12,782	161	42.9
Michigan Central	1924	16,296	13,913	30,209	5.2	2,648	1,803	673	20.2	386	30.1	6,387	113	51.0
	1923	16,173	20,519	30,692	7.2	...	1,794	741	21.7	419	28.2	7,039	121	45.9
New York Central.....	1924	72,850	61,372	134,222	5.2	20,656	2,189	961	26.0	421	24.9	8,754	110	42.3
	1923	57,741	89,499	147,240	6.8	3,407	2,212	1,026	28.0	505	27.9	11,493	115	50.9
New York, Chic. & St. L.	1924	11,678	10,270	21,948	6.2	1,393	1,683	665	21.5	610	43.0	8,027	110	68.4
	1923	5,168	14,111	19,279	10.6	...	1,517	644	22.7	766	48.8	8,841	124	81.9
Pere Marquette	1924	10,288	10,452	20,740	7.2	898	1,440	651	26.2	388	23.5	3,609	111	61.2
	1923	7,812	7,078	24,890	5.1	...	1,403	703	28.5	377	19.0	4,273	126	65.0
Pitts. & Lake Erie.....	1924	16,634	6,427	23,061	3.0	3,099	2,670	1,616	46.3	238	7.8	23,698	66	40.5
	1923	8,610	12,700	21,310	15.0	...	2,754	1,662	44.8	441	15.0	40,682	71	65.7
Wabash	1924	13,638	9,172	22,810	3.6	1,220	1,702	720	22.8	639	39.9	5,931	124	58.7
	1923	10,167	13,332	23,499	3.3	...	1,573	670	22.5	619	38.1	6,012	136	71.0
Central Eastern Region:														
Baltimore & Ohio.....	1924	73,290	31,285	104,575	13.0	7,215	1,765	857	29.8	470	24.2	9,448	156	54.9
	1923	57,778	45,946	103,724	4.3	...	1,733	887	32.8	615	28.9	12,230	170	68.4
Central of New Jersey.....	1924	18,582	9,480	28,062	5.0	2,817	1,590	754	31.3	245	13.0	9,918	171	39.5
	1923	12,988	13,519	26,507	12.0	...	1,550	762	30.9	279	14.2	10,643	180	43.4
Chicago & Eastern Ill.	1924	15,556	4,388	19,944	17.0	3,490	1,636	784	27.8	284	15.5	6,023	138	45.5
	1923	12,675	5,094	17,771	17.1	...	1,514	754	28.5	326	16.7	6,160	167	42.1
Cleve., Cin., Chic. & St. L.	1924	17,700	18,639	36,339	5.9	3,962	2,053	974	29.5	556	29.7	8,496	116	50.4
	1923	12,483	23,604	36,087	7.5	...	1,992	990	31.3	647	31.8	9,830	118	55.5
Elgin, Joliet & Eastern ¹	1924	9,669	5,363	15,032	7.5	1,762	2,334	1,242	37.8	240	9.3	7,838	117	32.7
	1923	8,593	8,040	16,633	10.5	...	2,265	1,239	42.0	329	12.0	11,907	117	50.3
Long Island	1924	1,865	4,123	5,988	0.9	98	781	302	23.9	72	5.2	1,090	275	30.7
	1923	1,610	5,567	7,177	1.5	...	841	339	24.3	77	5.3	1,412	300	43.2
Pennsylvania System	1924	206,269	86,684	292,953	10.3	35,037	1,836	878	30.9	413	20.6	11,069	126	44.7
	1923	169,230	111,590	280,820	4.5	1,832	1,837	931	34.5	561	25.4	14,453	138	57.6
Reading	1924	25,290	12,569	37,859	2.5	4,684	1,633	834	33.6	429	20.0	14,252	161	46.0
	1923	17,098	20,756	37,854	4.7	...	1,720	930	36.4	573	24.2	18,980	168	63.1
Pocahontas Region:														
Chesapeake & Ohio.....	1924	27,044	11,875	38,919	5.9	530	2,454	1,341	43.1	1,156	46.0	17,604	106	69.4
	1923	27,444	14,495	41,938	7.6	...	2,360	1,312	43.2	1,024	40.1	16,822	113	65.6
Norfolk & Western.....	1924	30,222	8,977	39,199	5.0	2,045	2,405	1,284	42.0	883	34.3	15,523	151	49.2
	1923	27,499	12,593	40,092	5.3	...	2,332	1,282	43.9	934	35.0	16,805	172	54.7
Southern Region:														
Atlantic Coast Line.....	1924	20,838	8,953	29,791	4.8	...	1,304	540	22.1	356	25.0	2,216	121	43.5
	1923	16,120	9,460	25,580	7.2	...	1,260	537	22.7	426	28.2	2,239	124	49.4
Central of Georgia.....	1924	4,694	4,898	9,592	6.1	...	1,132	506	23.7	534	32.3	2,689	145	66.0
	1923	2,977	5,012	7,989	5.2	...	1,082	501	24.7	615	34.8	2,575	168	69.0
I. C. (inc. Y. & M. V.)	1924	44,275	20,343	64,618	7.9	1,480	1,789	779	26.4	642	37.2	6,698	119	61.0
	1923	34,605	32,285	66,890	6.5	2,406	1,718	781	28.4	722	39.8	7,804	132	75.6
Louisville & Nashville.....	1924	42,732	17,349	60,081	13.9	107	1,253	609	31.2	531	26.8	6,361	149	79.5
	1923	34,240	20,283	54,523	14.6	65	1,209	601	32.5	621	30.2	6,728	166	89.0
Seaboard Air Line.....	1924	10,218	6,470	16,688	6.7	...	1,262	512	21.8	454	31.3	2,136	140	59.0
	1923	8,540	8,051	16,591	18.4	...	1,174	515	23.0	438	26.9	2,047	154	59.7
Southern Ry.	1924	39,772	18,874	58,646	5.9	...	1,254	512	22.1	396	26.5	3,392	165	47.9
	1923	31,058	28,148	59,206	4.8	...	1,197	537	23.8	431	25.6	3,673	183	54.0
Northwestern Region:														
Gulf, Colo. & S. Fe.....	1924	54,023	16,464	70,487	6.9	7,233	1,806	669	21.9	555	39.5	3,922	117	67.6
	1923	48,864	19,534	68,398	7.9	8,623	1,661	599	20.8	501	37.6	3,642	135	67.8
Chicago & Alton.....	1924	9,857	5,015	14,872	4.4	2,500	1,469	616	25.0	447	28.0	6,501	135	73.1
	1923	7,697	7,190	14,887	7.7	...	1,461	627	25.1	492	30.0	7,256	145	78.1
Chic., Burl. & Quincy	1924	52,677	20,854	73,531	7.9	1,837	1,735	801	28.1	574	32.7	4,527	137	57.1
	1923	46,937	26,212	73,149	5.0	2,988	1,621	751	27.2	562	31.8	4,410	158	61.7
Chic., Rock I. & Pacific.	1924	34,516	22,546	57,062	11.1	6,541	1,340	607	25.0	477	27.3	3,647	141	59.3
	1923	29,833	27											

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1924

Name of road.	Average mileage operated during period.	Operating revenues—		Operating expenses—				Net after rents, 1923,										
		Freight.	Pasenger. (inc. mine.)	Maintenance of Way and Structures.	Equip- ment.	Trans- portation.	General.											
Akron, Canton & Youngstown..... Aug.	170	\$26,254	\$823	\$25,563	\$30,552	\$10,276	\$63,922	\$9,610	\$135,507	\$120,056	\$106,700	\$76,557	\$17,285					
8 mos.	170	1,718,282	5,771	1,785,447	245,437	183,139	76,504	498,613	78,531	1,079,453	60,30	710,084	602,871	392,497				
Alabama & Vicksburg..... Aug.	141	1,614,054	505,274	2,30,940	386,852	62,652	92,199	78,564	78,861	16,020	76,60	471,092	43,832	50,448				
8 mos.	141	1,614,054	505,274	2,30,940	386,852	62,652	92,199	78,564	78,861	111,278	1,834,848	76,60	471,092	43,832	50,448			
Vicksburg, Shreveport & Pacific..... Aug.	183	268,366	89,179	38,174	62,968	36,175	11,334	129,611	14,957	257,639	67,20	125,535	96,137	84,612	105,310			
8 mos.	183	1,868,841	703,388	2,76,759	499,713	469,897	95,246	986,657	119,517	2,81,922	78,70	57,867	40,10,559	29,2942	510,678			
Ann Arbor..... Aug.	293	3,088,660	319,523	3,554,838	456,533	663,467	74,267	78,564	9,199	177,565	14,418	36,242	79,90	91,317	60,896	91,181		
8 mos.	293	3,088,660	319,523	3,554,838	456,533	663,467	74,267	78,564	9,199	177,565	14,418	36,242	79,90	91,317	60,896	91,181		
Atchison, Topeka & Santa Fe..... Aug.	9,120	12,483,260	3,600,210	17,177,046	2,955,462	3,590,338	288,222	5,311,022	323,166	12,308,388	70,40	5,168,658	3,586,798	3,702,543	3,334,154			
Gulf, Colorado & Santa Fe..... Aug.	93	5,008,294	973,220	29,822,242	120,810,360	20,193,754	30,074,685	2,448,899	39,902,201	2,788,690	94,470,937	78,20	26,319,303	17,550,826	18,73,578	26,197,409		
Atlanta & West Point..... Aug.	93	1,10,916	2,21,191	2,65,696	377,336	487,774	42,961	75,299	64,596	1,607,498	68,20	84,276	1,58,311	67,767	463,105			
Panhandle & Santa Fe..... Aug.	858	978,078	30,610	1,159,924	147,459	210,392	7,174	271,258	17,132	652,976	56,30	506,948	480,243	431,582	139,923			
Atlanta & West Point..... Aug.	858	5,008,294	973,220	6,332,255	1,150,422	1,713,621	62,911	90,063	10,874	147,446	78,60	1,355,104	1,152,884	826,920	231,836			
Charleston & Western Carolina..... Aug.	342	1,10,916	2,21,191	2,65,696	383,845	1,885,772	32,943	40,227	9,316	91,063	88,151	1,52,612	80,70	363,160	267,551	250,583		
Western of Alabama..... Aug.	133	117,096	66,997	244,100	33,260	46,577	9,699	22,702	10,875	177,488	72,70	66,612	52,759	49,680	32,182			
Atlanta, Birmingham & Atlantic..... Aug.	639	1,262,888	547,515	2,049,179	259,294	323,400	86,403	23,400	62,889	62,791	1,502,801	74,90	502,378	401,812	370,477	32,030		
Baltimore & Ohio..... Aug.	4,864	3,409,844	973,220	5,012,223	886,821	583,285	681,686	180,223	1,331,630	16,608	360,964	88,00	49,294	36,511	43,813	—18,763		
Baltimore & Ohio Chicago Term..... Aug.	4,865	38,538,477	12,450,528	53,325,241	6,937,377	11,170,171	118,138	77,892	2,788,800	11,692,337	1,227,817	40,319,584	72,20	15,005,657	11,542,182	10,881,647	10,352,213	
Charleston & Western Carolina..... Aug.	342	2,45,913	38,741	30,57,799	4,52,527	58,178	57,232	1,20,116	7,489	235,862	77,20	68,947	52,271	45,153	31,904	43,025		
Baltimore & Ohio..... Aug.	5,303	14,411,761	5,012,223	12,450,528	6,937,377	11,170,171	118,138	77,892	2,788,800	11,692,337	1,227,817	40,319,584	72,20	15,005,657	11,542,182	10,881,647	10,352,213	
Bangor & Aroostook..... Aug.	616	3,737,696	542,850	4,473,820	833,358	53,266	42,507	15,102	1,314,297	15,102	1,384,501	1,056,342	54,939	2,599,183	81,70	470,123	329,372	266,618
Beth Ry. Co. of Chicago..... Aug.	32	1,48,275	36,577	1,545,362	142,956	44,245	3,190	127,227	15,377	255,821	89,90	28,655	14,034	14,722	11,947	4,251,427	4,251,423	
Bessemer & Lake Erie..... Aug.	228	1,48,275	36,577	1,545,362	142,956	44,245	3,190	127,227	15,377	255,821	89,90	28,655	14,034	14,722	11,947	4,251,427	4,251,423	
Staten Island Rapid Transit..... Aug.	23	89,552	150,424	284,446	81,708	29,609	1,168	11,751	92,254	3,494,803	359,203	13,241,094	71,70	5,205,709	4,213,427	4,213,427	4,213,427	
Bingham & Garfield..... Aug.	33	45,103	90,916	1,853,433	395,513	263,195	17,951	129,651	121,492	4,621,422	78,00	32,256,302	25,454,327	24,459,568	23,459,568	23,459,568		
Boston & Maine..... Aug.	34	307,976	2,171,210	19,685,746	14,705,427	18,415,506	31,219,506	10,249,290	12,499,125	4,621,422	78,00	32,256,302	25,454,327	24,459,568	23,459,568	23,459,568		
Central of Georgia..... Aug.	2,287	3,747,537	14,382,210	6,659,529	869,435	1,342,467	42,507	15,102	1,314,297	15,102	1,384,501	1,056,342	54,939	2,599,183	81,70	470,123	329,372	266,618
Brooklyn Eastern District Terminal..... Aug.	9	98,881	105,007	3,960	22,147	4,6205	1,61,473	1,342,162	20,183	4,230,414	8,939	241,778	57,30	254,359	209,112	189,131	171,131	
Buffalo, Rochester & Pittsfield..... Aug.	591	1,076,876	162,080	1,79,169	1,057,626	3,31,016	4,62,826	3,323,296	27,094	497,540	39,872	1,015,319	78,60	1,421,529	1,421,529	1,421,529	1,421,529	
Canadian Pacific, Lines in Maine..... Aug.	166	99,820	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	1,23,916	
Carolina, Clinchfield & Ohio..... Aug.	309	8,939,282	407,722	5,586,707	661,895	1,342,162	20,183	1,342,162	20,183	1,342,162	41,795	18,996	497,277	65,40	263,385	213,403	213,403	213,403
Central Vermont..... Aug.	434	1,158,273	41,134	1,23,916	276,828	543,719	1,23,916	1,23,916	1,23,916	1,23,916	41,560	8,711	1,313,015	47,76	1,313,015	47,76	1,313,015	47,76
Central of New Jersey..... Aug.	691	3,502,329	1,226,111	3,013,802	545,292	504,176	35,653	1,809,349	98,140	3,012,173	70,80	30,662	31,120	31,120	28,632	28,632	28,632	
Central Vermont..... Aug.	434	1,158,273	41,134	1,23,916	276,828	543,719	1,23,916	1,23,916	1,23,916	1,23,916	41,560	8,711	1,313,015	47,76	1,313,015	47,76	1,313,015	47,76
Chesapeake & Ohio..... Aug.	2,555	8,078,424	1,081,121	9,533,378	1,417,472	2,895,426	1,417,472	1,417,472	1,417,472	1,417,472	1,417,472	1,417,472	1,417,472	1,417,472	1,417,472	1,417,472	1,417,472	
Chicago & Dalton..... Aug.	1,050	1,925,399	628,332	5,136,554	69,473	63,69,903	37,272,455	61,379	61,379	61,379	61,379	61,379	61,379	61,379	53,447	1,938,037	1,938,037	1,938,037
8 mos.	1,050	1,925,399	628,332	5,136,554	69,473	63,69,903	37,272,455	61,379	61,379	61,379	61,379	61,379	61,379	61,379	53,447	1,938,037	1,938,037	1,938,037
8 mos.	1,050	1,925,399	628,332	5,136,554	69,473	63,69,903	37,272,455	61,379	61,379	61,379	61,379	61,379	61,379	61,379	53,447	1,938,037	1,938,037	1,938,037
8 mos.	1,050	1,925,399	628,332	5,136,554	69,473	63,69,903	37,272,455	61,379	61,379	61,379	61,379	61,379	61,379	61,379	53,447	1,938,037	1,938,037	1,938,037

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1924—CONTINUED

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1924—CONTINUED

Name of road.	Average mileage operated during period.	Operating expenses						Operating ratio.	Net from railway operation.	Net after rents, 1923.
		Freight.	Passenger.	(In. miles.)	Maintenance of Way and structures.	Equipment.	Traffic.			
Erie	2,055	\$6,860,606	\$1,384,489	39,922,827	\$1,181,039	\$2,238,897	\$142,464	33,276,803	\$21,995	\$1,226,535
Chicago & Erie	2,055	\$4,284,010	\$8,981,810	6,589,912	8,680,156	18,794,896	1,150,721	27,100,545	\$272,584	\$1,304,266
Florida East Coast	2,269	9,556,669	77,811	1,113,721	145,029	113,472	1,424,456	371,171	277,300	7,792,156
New Jersey & New York	2,269	7,853,294	4,021,881	9,998,651	9,998,924	1,209,972	178,972	3,203,794	293,405	10,405,287
N. Y., Susquehanna & Western	8 mos.	45	185,809	833,545	1,059,621	156,863	10,156	512,175	28,953	62,402
Ind. & Terre Haute	143	134,559	5,282	1,132,723	119,716	15,074	458,420	27,018	83,482	\$1,357,357
Florida Wharf Co.	13	726,877	65,225	286,940	1,326,903	247,860	113,791	413,545	31,865	9,163,930
Port Smith & Western	249	138,710	21,412	142,484	24,852	18,658	1,126,793	28,953	29,656	11,68,994
Evansville, Ind. & Terre Haute	143	134,559	5,282	1,132,723	119,716	15,074	458,420	27,018	83,482	\$1,357,357
Georgia & Florida	13	249	886,462	153,338	1,111,440	211,876	41,203	191,203	86,703	210,804
Georgia & Florida	13	406	143,480	283,259	286,940	20,868	45,016	1,047	28,953	109,643
Georgia & Florida	13	406	953,263	148,762	1,170,985	140,732	16,064	7,144	219,471	61,50
Grand Trunk Western	347	1,087,372	273,685	1,441,619	148,604	16,064	67,707	44,039	65,092	61,50
Atlantic & St. Lawrence	166	9,942,311	1,555,602	1,228,834	1,455,736	3,26,736	357,014	53,289	53,804	44,446
Chicago, Det. & Canada Gr. Tr. Jct. Aug. 8 mos.	59	162,349	7,059	119,768	998,208	63,028	91,522	21,750	228,777	19,414
Det., Grand Haven & Milwaukee	59	1,604,340	67,476	1,911,731	30,240	18,635	17,157	1,672,833	16,316	84,446
Green Bay & Western	189	404,820	4,347	1,985,300	10,391	1,047	1,047	28,953	3,13,530	1,14,493
Great Northern	8251	6,667,553	1,347,374	8,925,495	1,30,231	1,49,194	157,154	3,032,505	42,316	63,800
Great Northern	8251	47,952,444	8,886,903	63,173,731	9,688,278	11,31,640	1,402,988	24,336,02	1,71,093	1,226,579
Green Bay & Western	234	99,302	9,985	117,345	12,21,738	1,187	3,404	1,63,190	21,929	1,226,579
Gulf Coast Lines	922	1,036,251	187,267	1,277,364	210,708	151,791	236,368	275,379	81,828	47,840
Gulf & Ship Island	307	220,381	43,441	4,28,985	9,58,329	1,20,677	2,36,677	2,77,924	34,972	1,21,026
Gulf, Mobile & Northern	465	428,906	38,758	9,349,512	2,205,469	12,702,114	3,074,597	4,145,625	3,39,545	1,120,426
Hocking Valley	348	1,344,913	87,419	1,605,880	27,491	54,138	13,819	456,036	1,233,707	1,09,422
Illinois Central	4,847	9,349,512	17,189,146	99,332,418	76,968	19,201	1,594,129	36,144,39	5,35,711	1,14,448
Yazoo & Mississippi Valley	1,320	1,333,130	1,270,582	2,433,788	1,280,666	1,75,344	27,320	32,447	1,25,451	1,437,896
International Great Northern	1,159	1,151,610	19,62,929	11,27,439	14,90,540	25,50,116	1,786,368	4,77,551	1,31,148	1,14,123
Kansas City Southern	767	1,201,727	173,137	1,514,844	225,615	14,13,620	3,40,838	225,600	1,07,924	1,131,924
Kansas City, Mexico & Orient	272	253,091	11,517	271,407	1,403,506	1,702,114	3,074,391	4,145,625	3,275	1,997,279
Kansas City, Mo. & Orient	81	200,373	66,249	1,20,519	29,791	31,199	4,149	577,424	1,260,993	1,14,448
Kansas City, Tex. & Orient	81	1,629,562	113,278	1,328,517	1,431,981	2,090,808	2,435,036	192,239	5,199,465	1,026,447
Kansas, Oklahoma & Gulf	314	1,67,904	10,040	1,22,896	41,143	19,193	8,049	64,873	9,427	2,31,976
Lake Superior & Ishpeming	162	1,228,094	3,601	1,19,912	32,446	22,442	6,440	1,25,404	4,519	10,509
Texarkana & Ft. Smith	162	1,027,904	19,187	1,194,351	308,164	185,031	4,298	363,589	43,190	164,503

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1924—CONTINUED

REVENUES AND EXPENSES OF RAILWAYS

Month of August and Eight Months of Calendar Year 1924—CONTINUED

Name of road	Average mileage operated during period.			Operating revenues			Operating expenses			Net from railway operation.			Operating income (or loss).	Net after rents, 1923.			
	Freight.	Pasenger.	Total (line, miles)	Way and equipment.	Structures.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Operating ratio.	Operating ratio.					
New York, New Haven & Hartford, Aug. 8 mos.	\$5,054,270	\$6,654,271	\$11,699,905	\$1,666,055	\$2,143,606	\$73,390	\$3,885,131	\$27,375	\$8,131,679	75.60	\$2,618,226	\$2,215,819	\$1,720,083	\$1,641,116			
Central New England..... Aug. 8 mos.	1,971	41,839,697	33,021,008	84,166,940	11,123,782	18,389,379	526,808	31,917,379	2,264,274	65,437,211	77.80	18,669,729	15,405,318	11,974,167	1,765,312		
New York Connecting..... Aug. 8 mos.	293	5,616,534	10,459	14,511,149	13,818	11,743,434	40,549	5,109	1,766,277	94,593	3,831,356	71.40	1,535,291	1,129,414	1,077,763	543,169	
New York, Ontario & Western..... Aug. 8 mos.	569	829,348	765,414	1,799,429	281,645	162,087	114,962	15,548	546,207	34,627	1,096,496	30.80	1,344,203	1,037,103	1,022,098	1,29,657	
New York, 8 mos.	569	5,798,395	2,240,354	9,382,650	1,316,770	1,663,505	125,206	4,007,259	285,018	7,408,060	78.90	1,974,590	1,589,975	1,260,913	894,105		
Norfolk & Western..... Aug. 8 mos.	2,240	6,891,363	849,208	8,042,326	1,358,891	1,790,120	104,205	2,334,379	153,735	5,740,012	71.40	2,301,314	1,838,633	1,798,904	1,798,904		
Norfolk Southern..... Aug. 8 mos.	931	5,520,029	1,371,195	6,071,101	60,478,555	9,808,418	14,808,338	702,728	19,455,203	1,330,528	46,235,550	76.40	14,246,005	9,135,921	10,296,799	12,563,738	
Northern Pacific..... Aug. 8 mos.	6,669	5,639,272	1,230,871	7,611,971	1,181,868	1,247,685	154,489	2,717,727	222,693	5,779,032	75.60	1,859,939	1,171,435	1,420,422	1,205,236		
Northwestern Pacific..... Aug. 8 mos.	480	475,472	2,672,637	2,565,349	2,986,852	89,746	1,319,477	21,817,977	1,814,471	47,298,495	82.20	10,240,833	4,812,318	7,677,169	5,736,198		
Pennsylvania..... Aug. 8 mos.	492	2,648,146	1,672,446	2,561,422	4,805,436	818,873	12,939,397	63,613	20,048,242	14,570,739	3,516,559	55.90	10,205,947	2,059,478	809,340	1,022,166	
Baltimore, Chesapeake & Atlantic..... Aug. 8 mos.	125	288,453,377	9,997,316	57,915,492	42,479,778	12,939,396	1,144,762	1,147,677	5,199,181	166,965,447	11,407,535	34,951,288	75.80	13,554,419	6,867,358	50,944,668	7,803,355
Pekin & Marquette..... Aug. 8 mos.	106	670,808	295,756	1,004,301	97,101	213,451	16,374	2,389	83,326	3,180	1,151,313	61.30	84,768,455	63,897,624	54,278	42,645	
Long Island..... Aug. 8 mos.	397	804,412	2,700,849	3,780,741	304,674	434,843	26,374	1,283,020	66,015	2,126,232	56.20	1,654,489	1,326,856	987,307	898,766		
West Jersey & Seashore..... Aug. 8 mos.	397	6,892,811	13,951,334	23,669,412	2,911,778	12,939,397	176,832	12,939,397	1,131,759	12,656,477	17,670,417	75.00	5,898,995	4,532,683	2,978,400	2,978,400	
Pittsburgh & Reading Company..... Aug. 8 mos.	360	408,482	1,411,999	1,902,657	229,315	221,972	31,080	593,304	32,411	1,110,327	58.40	792,330	47,856,072	382,579	382,579		
Pittsburgh, Shawmut & Northern..... Aug. 8 mos.	2,814,717	5,520,941	8,920,249	1,309,662	1,568,513	127,473	3,941,472	206,372	7,183,572	80.50	1,766,627	963,756	719,186*	898,788			
Quincy, Omaha & Kansas City..... Aug. 8 mos.	250	440,899	173,179	680,332	244,797	132,318	1,366	48,380	110,847	89.60	12,803	10,146	3,632	-10,678			
Reading Company..... Aug. 8 mos.	116,071	2,738	123,650	27,332	27,305	1,304	385,114	46,338	898,938	100.40	3,958	-23,491	-6,397	-17,596			
Richmond, Fredericksburg & Potowmac..... Aug. 8 mos.	117	4,110,506	2,751,624	844,331	911,783	1,532,027	65,362	343,982	23,294	750,533	110.30	-5,985	-12,865	-12,432			
Atlantic City..... Aug. 8 mos.	169	1,447,110	725,540	905,238	725,540	40,208	577,533	2,615,856	1,669,390	47,072,585	77.20	13,343,778	10,490,118	11,586,155	21,418,206		
Perkiomen..... Aug. 8 mos.	41	84,501	9,009	96,183	1,592	4,750	106	40,623	5,722	4,921,199	54.20	4,944,911	1,884,454	3,888,824	349,365		
Port Reading..... Aug. 8 mos.	21	707,049	51,635	787,135	73,125	862	341,443	6,353	465,168	64.60	31,115	26,620	5,256,205	4,145,559	4,423,767		
Rutland..... Aug. 8 mos.	1,619,040	1,323,477	1,541,310	1,323,477	1,767,533	85,004	1,832	61,151	229	61,151	67.50	39,542	36,728	-12,163			
St. Louis-San Francisco..... Aug. 8 mos.	413	2,461,613	972,053	4,363,724	570,070	110,538	840,131	263,339	72,928	1,659,167	39,911	2,876,134	53,427	140,073			
St. Louis Southwestern..... Aug. 8 mos.	969	1,222,045	1,56,125	1,453,221	528,222	1,047,030	1,03,121	2,026,812	2,026,812	1,917,031	85.00	1,04,988	67,500	1,12,163			
Pt. Worth & Rio Grande..... Aug. 8 mos.	235	88,863	26,803	127,728	1,355,330	2,496,636	303,930	3,010,298	455,277	2,018,9	64.30	47,244,6	36,728	-13,516			
St. Louis, San Francisco & Texas..... Aug. 8 mos.	134	995,483	106,222	1,157,383	1,15,383	26,282	37,878	4,3,304	5,2,060	907,344	64.40	39,541	37,065	3,608			
St. Louis Southwestern..... Aug. 8 mos.	969	1,222,045	1,56,125	1,453,221	528,222	1,047,030	1,03,121	2,026,812	2,026,812	1,917,031	85.00	1,04,988	67,500	1,12,163			
St. Louis Southwestern of Texas, Aug. 8 mos.	807	5,26,515	102,531	680,931	1,181,644	1,13,239	19,696	2,021,234	2,021,234	2,021,234	85.00	1,04,988	67,500	1,12,163			
San Antonio & Aransas Pass..... Aug. 8 mos.	739	3,72,183	916,879	1,13,239	1,16,535	1,389,941	1,13,239	2,021,234	2,021,234	2,021,234	85.00	1,04,988	67,500	1,12,163			
San Antonio, Uvalde & Gulf..... Aug. 8 mos.	317	12,090	22,973	1,15,383	21,167	12,259	4,590	5,180,7	6,332	96,425	62.10	55,206	55,575	4,383,87			
Seaboard Air Line..... Aug. 8 mos.	3,570	814,569	160,344	1,059,240	185,463	1,17,632	3,45,846	1,33,203	1,33,203	1,33,203	77.70	236,340	107,477	61,660			
Southern Ry. Aug. 8 mos.	3,571	25,17,778	6,504,776	3,764,718	4,849,151	6,030,877	1,14,661	13,466,430	13,466,430	13,466,430	77.70	2,68,450	649,721	65,020			
Alabama Great Southern..... Aug. 8 mos.	318	4,754,255	1,388,262	6,334,944	981,390	1,451,444	165,118	2,121,833	2,05,130	1,02,906	589,549	3,358,522	4,036,808	4,036,808			

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1924—CONTINUED

Name of road	Average mileage operated during period			Operating revenue						Maintenance of equipment						Operating expenses					
	Freight.	Pasenger.	Total	(In. miles.)	Passenger.	Way and structures.	Traffic.	Transportation.	General.	Total.	Operating ratio.	From railway operation.	Net after rents, 1923.	Operating income (or loss).	Net after rents.	Operating ratio.	From railway operation.	Net after rents, 1923.			
Cia., New Orleans & Tex. Pacific. Aug.	\$1,438,773	\$1,899,542	\$3,370,097	3,165,000	\$252,818	\$367,447	\$40,292	\$529,837	\$49,634	\$1,250,389	65.80	\$649,233	\$358,588	\$365,902	\$364,883	\$358,588	\$365,902				
Georgia, Southern & Florida. Aug.	338	11,059,597	2,784,388	14,591,555	3,008,608	30,616,5	4,109,62	4,109,62	10,364,596	3,008,608	4,109,62	74.00	4,216,591	3,447,761	3,277,111	3,447,761	3,277,111	3,447,761			
New Orleans & Northeastern. Aug.	401	2,149,532	880,067	3,475,096	561,867	4,175,179	1,245,179	1,245,179	10,403	2,299,882	70.30	1,26,832	66,066	39,084	69,332	66,066	39,084	69,332			
Northern Alabama. Aug.	110	855,538	2,104,014	3,216,736	97,785	452,215	61,678	88,547	10,825	131,251	21,356	3,172,502	1,245,179	84,023	1,34,429	97,081	84,023	1,34,429	97,081		
Southern Pacific. Aug.	7,199	11,112,457	3,910,797	16,695,008	5,021,553	2,476,790	281,618	5,492,806	11,018,017	66,006	5,219,181	24,95,684	23,49,252	4,529,932	24,95,684	23,49,252	4,529,932	24,95,684			
Arizona Eastern. Aug.	382	241,014	20,077	22,903	45,190	40,452,227	2,306,116	42,163,354	3,992,784	88,767,446	71,60	3,52,668	24,95,684	23,49,252	4,529,932	24,95,684	23,49,252	4,529,932			
Atlantic Steamship Lines. Aug.	61,653	988,265	15,558	1,607,380	1,607,380	1,607,380	157,980	5,301,062	16,557,215	1,555,720	70.40	3,52,668	24,95,684	23,49,252	4,529,932	24,95,684	23,49,252	4,529,932			
Galveston, Harris & San Antonio. Aug.	5,594,031	7,636,577	2,194,872	11,695,927	3,01,565	3,01,565	41,3,896	47,896	90,150	1,555,720	70.40	3,52,668	24,95,684	23,49,252	4,529,932	24,95,684	23,49,252	4,529,932			
Houston & Texas Central. Aug.	923	6,549,415	2,047,212	9,207,322	1,836,398	2,19,306	27,502	34,519	80,837	1,95,271	72,90	3,52,668	24,95,684	23,49,252	4,529,932	24,95,684	23,49,252	4,529,932			
Houston, East & West Texas. Aug.	191	2,171,504	4,048,696	6,280,484	52,864	46,7,204	50,276	3,778	91,260	1,72,788	70.40	3,52,668	24,95,684	23,49,252	4,529,932	24,95,684	23,49,252	4,529,932			
Louisiana Western. Aug.	1,379	12,476,716	3,448,960	16,736,963	3,043,645	3,287,454	340,359	5,832,003	699,134	13,306,813	79.20	3,490,150	2,980,426	2,420,647	1,096,548	2,980,426	2,420,647	1,096,548			
Morgan's L. & T. R. & S. Co. Aug.	400	496,288	144,521	688,756	62,116	161,836	19,467	26,878	34,383	54,682	70.40	3,490,150	2,980,426	2,420,647	1,096,548	2,980,426	2,420,647	1,096,548			
Texas & New Orleans. Aug.	507	540,502	1,277,415	1,606,463	1,446,206	1,00,84	2,20,217	22,588	30,427	85,400	70.40	3,490,150	2,980,426	2,420,647	1,096,548	2,980,426	2,420,647	1,096,548			
Spokane International. Aug.	165	588,768	18,095	794,722	22,052	10,648	3,430	26,513	26,446	66,679	80.50	3,490,150	2,980,426	2,420,647	1,096,548	2,980,426	2,420,647	1,096,548			
Spokane, Portland & Seattle. Aug.	514,740	160,170	743,128	109,771	94,930	9,915	23,0,45	17,932	47,4,85	63,90	70.40	3,490,150	2,980,426	2,420,647	1,096,548	2,980,426	2,420,647	1,096,548			
Tennessee Central. Aug.	296	1,380,056	340,622	1,841,170	315,875	55,275	37,936	6,794	1,63,598	9,814	80.00	50,346	44,964	24,732	1,096,548	24,732	1,096,548	24,732			
Terminal Railroad Ass'n of St. L. Aug.	37	.....	.....	421,408	95,697	42,280	95,6	17,043	8,542	80,398	70.40	3,490,150	2,980,426	2,420,647	1,096,548	2,980,426	2,420,647	1,096,548	
East St. Louis Connecting. Aug.	1	.....	.....	3,00,721	74,730	36,5,93	7,891	1,21,5,602	70,173	2,43,281	73,70	86,850	39,420	1,120,258	1,337,465	1,120,258	1,337,465	1,120,258	
St. L. Merchants' Bridge Term. Aug.	9	.....	.....	373,571	65,936	78,175	1,63,598	14,165	34,76,718	57,30	63,833	56,9,368	3,18,709	1,219,23	63,8,828	1,219,23	63,8,828	1,219,23	
St. Louis Transfer Ry. Aug.	6	.....	.....	2,93,451	61,665	2,01,014	883	1,65,795	6,846	29,4,347	80,00	50,346	44,964	24,732	1,096,548	24,732	1,096,548	24,732	
Texas & Pacific. Aug.	1,952	1,989,854	608,753	2,801,290	381,574	3,195,212	4,82,823	58,349	921,480	88,244	1,38,283	70,10	1,88,409	3,00,3,903	2,512,086	1,886,175	3,00,3,903	2,512,086			
Toledo, Peoria & Western. Aug.	247	11,357	28,533	154,980	34,243	4,240,4	4,240,4	458,051	7,38,255	1,35,906	57,30	63,833	56,9,368	3,18,709	1,219,23	63,8,828	1,219,23	63,8,828			
Trinity & Brazos Valley. Aug.	368	19,850	4,540,229	20,864,747	3,195,212	4,82,823	4,240,4	4,240,4	5,24,446	5,6,987	57,30	63,833	56,9,368	3,18,709	1,219,23	63,8,828	1,219,23	63,8,828			
Ulster & Delaware. Aug.	128	481,175	304,115	705,549	107,573	192,573	283,361	18,110	58,3,244	56,9,368	89,00	140,528	51,441	24,142	171,424	171,424	171,424	171,424			
Union R. R. of Penna. Aug.	45	.....	.....	927,961	126,087	261,929	176	39,876	8,633	790,685	85,20	137,176	110,676	178,818	390,719	109,006	390,719	109,006	
Union Pacific. Aug.	371	1,053,534	155,116	1,267,842	433,116	404,031	26,968	1,72,712	1,49,733	1,19,733	123,10	29,0,29	1,437,647	13,411,098	14,703,270	14,703,270	14,703,270	14,703,270			
Oregon Short Line. Aug.	2,383	2,186,349	543,094	2,335,623	64,3,848	45,5,816	4,28,286	5,18,93	91,593	91,593	75,10	5,25,0,47	401,731	406,769	3,00,926	2,48,730	3,00,926	2,48,730			
Oregon-Wash. R. R. & Nav. Co. Aug.	2,231	1,788,143	460,498	1,664,622	166,183	141,147	15,034	49,492	62,491	87,4,31	88,04	48,5,411	314,918	194,318	197,474	194,318	197,474	194,318			
Wabash. Aug.	3,664	13,723,014	3,364,532	18,764,869	3,536,286	5,11,558	5,15,567	6,708,440	931,455	15,11,494	80,40	3,65,385	2,28,434	1,531,845	517,825	517,825	517,825	517,825			
St. Joseph & Grand Island. Aug.	258	261,730	308,985	51,375	51,375	51,180	2,72,70	92,736	11,427	209,438	67,80	99,347	78,394	64,666	1,271	64,666	1,271	64,666			
Utah. Aug.	102	1,354,289	716	1,32,799	15,817	48,427	361	2,893	2,893	844,638	82,30	381,924	259,596	163,115	19,216	259,596	163,115	19,216			
Virginia. Aug.	935,671	3,358	944,067	127,326	314,283	314,283	29,008	2,893	2,893	60,988	6,007	99,700	75,10	31,099	27,532	5,398	27,532	5,398			
Whiting & Lake Erie. Aug.	511	1,349,068	81,877	1,565,127	20,685	313,181	12,550	395,674	40,492	80,585,550	71,30	60,5,408	515,466	526,056	3,47,302	517,825	3,47,302	517,825			
Western Maryland. Aug.	804	1,312,433	97,365	1,485,926	1,25,146	298,600	2,70,187	2,70,187	1,25,146	1,04,595	74,30	311,311	254,652	398,252	3,07,018	398,252	3,07,018	398,252			
Western Pacific. Aug.	1,042	1,022,225	261,743	1,465,396	276,216	206,652	37,398	43,473	43,473	1,04,665	74,60	3,53,34	2,553,34	2,553,34	3,07,018	2,553,34	2,553,34	3,07,018			
Whiting & Lake Erie. Aug.	107,401	474,557	12,03,500	1,680,340	3,119,323	3,119,323	205,700	4,138,513	4,138,513	9,520,507	79,10	2,512,993	1,656,982	1,656,982	5,811,964	1,656,982	1,656,982	5,811,964			

**Mackenzie King Refuses to Promise
Immediate Construction of Hudson Bay Railway**

Agitation for the completion of the Hudson Bay Railway is still lively in Western Canada, and the persistent demands of the Progressive party from which the Liberal government at Ottawa receives voting support in critical issues in the House of Commons had to be met by Premier W. L. Mackenzie King during his present speaking tour of the Western provinces. To a Winnipeg audience Premier King said: "I am not going to say that the Hudson Bay Railway will be completed at once by the present administration. I believe that to bring in a bill in the House of Commons just now to complete the road would be simply to encounter such opposition as might very materially defeat the ends of those who have that great undertaking most at heart. I believe that if such a bill were brought before Parliament it would not pass the Senate at the present time."

"I believe that there is great merit in the project, if only as a colonization road and as a means of developing the resources of the northern country. At the same time the federal government has chosen to go ahead with branch line projects. We felt that there were already settlers in those areas who were entitled to first consideration, rather than an area where there is not as yet a great amount of settlement. We have thought it only fair to Western Canada to endeavor to construct branch lines where they are most needed. We intend to press on in that way with railway construction."



Reproduction of a Poster Used on London's Subways—the Original Is in Color

Traffic News

The Akron (Ohio) Traffic Association will hold its Fall meeting, with a dinner, at Forest Inn, "the most beautiful roadhouse in the State of Ohio," on Wednesday evening, October 22.

Juice grapes continue to come through from California in great volume and last week an embargo had to be placed on shipments to New York. On Thursday, October 9, it was estimated that 1,258 carloads for New York were within a short distance of that city. Embargoes placed earlier against shipments to other cities—Pittsburgh, Buffalo and Rochester—were followed by excessive diversion of shipments to New York.

The Great Lakes Regional Advisory Board held its regular conference at Buffalo, N. Y., on October 14, with an attendance of about 500. Transportation lines were reported as working on an efficient basis. Shipments are going through in faster time than for months past. The increasing use of motor trucks, as a menace to railroad prosperity, was emphasized by some of the speakers. The possibility of a shortage of coal because of consumers' delay still exists.

The midwest regional advisory board held its Fall meeting at Chicago on October 15 and was attended by 350 delegates. Robert C. Ross, general chairman, stated that the grain movement is being handled without a car shortage due to the co-operation of shippers in promptly loading and releasing cars. The reports of the various committees indicated that the railroads are handling the present volume of business efficiently. The Illinois Central was cited as having an average daily movement of freight cars amounting to over 41 miles per car. M. J. Gormley, chairman of the Car service division of the American Railway Association, spoke on general business conditions and predicted that the coming year will demand service from the railroads equal or exceeding the demand of 1923. W. H. Finley, president of the Chicago & North Western, spoke on the present condition of the railroads in regard to legislation, earnings and the need of additional facilities.

Ever since the Canadian National Railways came into existence as a consolidated government-owned system the ports of St. John and Halifax have protested against through freight from the western state routed over the national lines being carried to Portland and Boston, instead of to the two Canadian ports on the Atlantic. Strenuous efforts have been made by the Canadian National management to meet the wishes of those ports on the Atlantic coast of the Dominion, and last week an important conference was held at St. John, N. B., between the city and port authorities and officers of the Canadian National. Following the conference Mayor Potts of St. John said, "I am much encouraged with the results obtained by this and previous conferences with the Canadian National officials. We are going to get more freight, both general cargo and grain, this year over the Canadian National and we are assured by the management of the Canadian Government Merchant Marine that there would be a larger number of sailings of that line this year from this port."

Freight Traffic for August and Eight Months

Freight traffic during the first eight months this year was nearly ten per cent below that for the corresponding period in 1923, when it was the heaviest on record, according to compilations by the Bureau of Railway Economics. Freight traffic during the eight months' period totaled 274,239,912,000 net ton miles, a decrease of more than thirty billion net ton miles as compared with the corresponding period last year.

In the Eastern district freight traffic during the eight months' period this year showed a decrease of 13.8 per cent, while in the Southern district the decrease amounted to 7.6 per cent and in the Western district there was a decrease of 4.7 per cent.

For the month of August alone freight traffic amounted to 36,442,340,000 net ton miles, a decrease of 3,901,890,000 net ton miles as compared with the same month last year, or 9.7 per cent. In the Eastern district there was a decrease of 17 per cent compared with August, 1923, while in the Southern district a decrease of 6.1

per cent was reported. Freight traffic in the Western district in August was virtually the same as that for the same month one year ago.

The daily average movement per car in August was 26.7 miles. This was an increase of two-fifths of a mile over the daily average for July but a decrease of one and one-half miles under the daily average for August, 1923. Compared with that for August, 1922, it was an increase, however, of five miles. The average load per freight car in August was 27.1 tons.

Claims Paid Increase

Loss and damage claims paid by 212 of the principal railroads of the United States and Canada totaled \$26,565,910 for the first six months of 1924 as compared with \$23,225,924 for the same period of 1923 and \$27,380,061 in 1922. The increase of the first six months in 1924 over the same period of 1923 amounts to 14.4 per cent. Payments on fresh fruits and vegetables showed an increase of 77 per cent. Loss classed as unlocated, due to defective or unfit equipment, robbery, concealed loss and error of employee, amounted to \$6,873,296, or 25.9 per cent of the total claims compared with 32.9 per cent in 1923. Damage classed as unlocated, due to rough handling of cars, improper handling, wrecks and fire, etc., amounted to \$15,160,153, or 57.1 per cent of the total. Payments caused by delay amounted to \$4,532,461, or 17 per cent of the total.

The Atchison, Topeka & Santa Fe in September loaded and received from connections 199,744 cars of freight or 8,000 car-loads more than were ever handled during any September.

Sleeping car service between Champaign, Ill., and St. Louis, Mo., has been established by the Illinois Traction (electric) System.

An agreement for the inauguration of a faster daily passenger train service between Portland, Ore., and Seattle, Wash., has been worked out by the Northern Pacific, the Great Northern and the Union Pacific whereby the Great Northern will run a train daily each way on a schedule of five hours and fifteen minutes or one hour and twenty-five minutes less than the present schedule.

Commercial Stocks of Anthracite and Bituminous Coal

The government's inventory of coal stocks taken recently revealed the following facts: Commercial stocks of soft coal on September 1, 1924, totaled 47,000,000 net tons, a decrease of 4,000,000 tons from stocks on June 1, and 15,000,000 tons from the record of January 1, 1924; the course of stocks has been constantly downward since the early weeks of the year; stocks on September 1, 1924, were 9,000,000 less than on the same date a year ago, and were more than double those on September 1, 1922, at the close of the miners' five months' strike; compared with August 1, 1921, there was an increase of 6,000,000 tons.

Measured in terms of tons, stocks decreased 24 per cent during the first 8 months of 1924. Measured in terms of days' supply the decrease was but little over 2 per cent. These percentages are based on averages which assume that the supply was evenly distributed. Stocks are never evenly divided, however, and the use of such averages is proper only for the purpose of comparison.

In addition to the estimated quantity in storage piles of actual consumers, the following quantities are known to have been in transit on September 1: On the commercial docks of Lakes Superior and Michigan, 6,600,000 tons; in storage at the mines or at intermediate points, at least 300,000 tons.

Retail dealers' stocks of anthracite were 71 per cent larger on September 1, 1924, than they were on the corresponding date of 1923, and they were but 7 per cent less than on November 1, 1921, two months later in the season. As a result of the steady movement of anthracite up the lakes the stocks, which stood at 450,000 tons on June 1, had increased to 1,400,000 tons by September 1.

Through the courtesy of the American Railway Association reports have been received from the railroads that indicated a total supply of railroad fuel in excess of 13,000,000 tons, which at the summer rate of consumption would last 42 days. On September 1, 1923, the railroads had stored 16,000,000 tons, sufficient for 44 days at the August, 1923, rate of consumption. These figures include the coal in cars and chutes as well as that in stockpiles.

REPRESENTATIVES of the management and of the telegraphers and station agents of the Illinois Central met at Memphis, Tenn., on October 13, to consider a request of the employees for wage increases of from five to six cents an hour.

Commission and Court News

State Commissions

The Railroad Commission of Missouri will defer until January its inquiry into surcharge fares on sleeping cars.

The Colorado Public Utilities Commission, which gave the Denver & Rio Grande Western permission to tear up its tracks between Malta, Colo., and Leadville, has rescinded its order due to the strong objection offered by business men of Leadville.

Court News

Noncompliance with Stipulation as to Time of Suit

The Georgia Court of Appeals holds that where the carrier fails to bring evidence of noncompliance with the provision in the bill of lading that suit be brought within six months, the trial court's failure to charge the jury as to the necessity for such compliance is not error.—*Davis v. Mizell* (Ga. App.) 120 S. E. 690.

Time Limit for Suit Not Waived

by Request for Time to Investigate

The North Carolina Supreme Court holds that a carrier did not waive the contractual provision that suit must be brought within 12 months by a request for time to investigate the claim.—*Skyland Hosiery Co. v. American Ry. Express Co.*, 186 N. C. 655, 120 S. E. 228.

Time Table and Running Time of Train Competent Evidence of Speed

The Minnesota Supreme Court holds that a time table is competent evidence as bearing on the probable speed of the second section of a train at the time of a collision, and the regular running time of the train is also admissible.—*Perkins v. Chicago, M. & St. P. (Minn.)* 197 N. W. 758.

Railroad Not Liable for Injury to Stock Not Apparently in Danger

The Colorado Supreme Court holds that a railroad is not liable for killing stock on the track merely if the animal could have been seen in time to prevent collision; and an engineer is not required to check the speed of his train unless the animal is likely to go upon the track.—*Davis v. Holly Sugar Corp. (Colo.)* 221 Pac. 1091.

Consignee Cannot Accept Goods Without Paying Demurrage

The North Carolina Supreme Court holds that a consignee, after receiving written notice, and after knowledge that demurrage has accrued, cannot receive, unload and accept goods without paying demurrage, which is part of the cost provided for by the tariff and cannot be waived by the carrier—*Davis v. Greensboro Warehouse & Storage Co.*, 186 N. C. 675.

Railroad Entitled to Instruction as to Disobedience of Switchman Going Between Cars

The Supreme Court of Minnesota holds, in an action for the death of a switchman while switching a car of which the pin lifting device of the coupler was gone, the defendant was entitled to an instruction that if the foreman of the switching crew, on learning of this from the deceased, ordered him to go to the other side of the car, and the deceased disobeyed the order, his disobedience, and not the defective coupler, was the proximate cause of his death, barring recovery.—*Schendel v. Chicago, M. & St. P. (Minn.)* 197 N. W. 744.

Labor News

The Florida East Coast has granted wage increases of from 2½ cents an hour to \$6.50 a month to its section foremen, bridge and building foremen, bridge and building laborers and drawbridge tenders.

The Railroad Labor Board has sent to the Great Northern for investigation four cases involving the dismissal of shopmen, which were submitted to the Labor Board last January by the Railway Employees' department of the American Federation of Labor.

The Illinois Central and the Order of Railroad Telegraphers have presented a joint submission to the Railroad Labor Board asking it to rule on a dispute over a requested increase in wages of from five to six cents an hour, time and one-half for Sundays and holidays and proposed vacation rules. The telegraphers had already taken a strike vote on the question when a conference between E. J. Manion, president of the organization, with officers of the road led to the decision to submit the controversy to the board.

Canadian Unions Protest Against Claim That Wages Are Too High

Railway men's unions throughout Canada have joined in a protest to the Dominion Railway Board against statements made in the recent application of the Tudhope Anderson Company of Winnipeg and Orillia, Ont., which firm in urging decreased freight rates took the ground that wages paid to railway employees were unreasonably high, unfair and extravagant. The railway men's memorial declares these statements to be untrue, and assumes that the Railway Board will not attempt to interfere in matters outside its jurisdiction.

Negotiations between the Canadian National Railways and conductors and trainmen employed on that road in respect to wages and conditions have been postponed subject to reopening upon intimation by the men of a desire to resume. The negotiations opened in February last following a demand from the men that a similar settlement to that recently put into force on the New York Central and other United States lines should become operative on the Canadian National.

Labor Board Hears Clerks' Claim for Wage Increases

Representatives of the Brotherhood of Railway & Steamship Clerks, Freight Handlers, Express & Station Employees, appearing before the Railroad Labor Board last week, to advance arguments for wage increases for the clerical employees on 40 railroads in all parts of the United States, based their claims upon an alleged increase in the cost of living and on the contention that clerical employees in other industries receive proportionately higher wages. Officers of other brotherhoods also renewed their plea for a "living wage," which they made in a similar hearing two years ago, and complained at length against the situation of the "owners of railroad stocks and bonds taking approximately a billion dollars a year in profits before the hundreds of thousands of railroad employees who produce the transportation for a pauper wage" are considered.

In arguing their contention, representatives of the brotherhood claimed that in the last 12 years, from 1912 to 1923 inclusive, the railways have made "total net profits" of over ten billion dollars. Other billions of profit, witnesses declared, have been "concealed from the public by the separate incorporation of the manufacturing department of the transportation industry" since the railways, in purchasing supplies from the railway supply companies, have made "not too close a scrutiny of the prices charged" on account of both being controlled by the same interests. The arguments of the brotherhood that the cost of living has increased and that the employees should be granted a "Living Wage" were substantially the same as those made in previous wage hearings.

Speaking for approximately a third of the western railway mileage represented at the hearing, J. W. Higgins, chairman of the General Managers' Association of Chicago, attacked the state-

ment of the officers of the brotherhood. Mr. Higgins said in part: "The thing that strikes me as strange about what these gentlemen term a 'scientific study of the situation' is their selection of the year 1895 as the basis to show the purchase power of a dollar. The year 1895 was the third year of one of the worst industrial depressions this country ever saw and was the year in which not only the industrial workers, but the farmers suffered. It was a panic year with panic prices and consequent unemployment and regardless of how low the prices were, a great many people were not working and could not find employment."

"As for the unsupported charge made to the effect that the railroads' high 'living costs' are connived at and encouraged by the railroads themselves: this insinuation that the railroads should be one exception among consumers in a high market for all commodities, that they should buy at lower than market prices, would be unworthy of notice except for the fact that it shows the mental attitude that gave this movement life."

Mr. Higgins called attention to resolutions passed at the annual convention of the brotherhood at Dallas, Texas, in May, 1922, which insinuated that the Labor Board's reduction in wages at that time, without insuring reductions in freight and passenger rates, was a transaction that "had the appearance of cheating and swindling the public and the railway employees"; and which instructed the officers of the brotherhood to proceed with immediate action to secure the restoration of wage rates which were in effect under Decision No. 2 of the Labor Board. With regard to this resolution Mr. Higgins said:

"While the program gives no consideration to industrial and economic conditions or to the factors laid down in the Transportation Act, it demands that this board restore the rates of the peak period of 1920 although the conditions since that time have pointed to lower levels in all industries. There is evidence that this unreasonable program lacks the support of many of the clearer thinkers because but 38 per cent of the western mileage is represented in this hearing and we know that several settlements have been made at the present level of rates."

"The United States Department of Labor shows lower living costs for the quarter ending June, 1924, than at any time during 1923 and that there has been a gradual reduction in this cost since October, 1923, when Decision 1986 gave the last increase in wages. Using 1913 as the base, the Department of Labor retail price figures show the peak in living cost was reached in the quarter ended June, 1920, index No. 216.5. In July, 1920, your Decision 2 gave various substantial increases to all classes. The index dropped to 180.4 in May, 1921. Your Decision 147 followed in July, 1921. The index dropped to 166.6 just prior to Decision 1074 in June, 1922. Later in 1922 a low upward trend occurred and this upward trend continued until December, 1923, when the index showed 173.2 but before that date the increases in Decision 1986 had become effective. Since last December there has been a progressive decline in living cost up to the latest available government report covering June, 1924."

"The facts show that there is nothing to support a wage increase at this time. The local committees presented nothing in support of their demand and this hearing has produced nothing to justify it. In Decision 1621 in the Spring, and Decision 1986 in the Fall of 1923, you increased some of these classes and denied others but immediately the increases were applied another agitation was begun and in less than a year since they received the last wage increase they are back with unsupported demands that these railroads increase all classes, in many cases exceeding the rates of Decision 2.

"The only reason apparent to us for this reappearance before the board for the third time since the date of Resolution No. 11 seems to be the requirements of that resolution, which was passed at the clerks' convention at Dallas, Texas, in May, 1922, which to quote Mr. Fitzgerald, 'makes this action mandatory and therefore general committees who do not comply with these instructions will doubtless be held accountable.'

"These demands disregard the factors provided by law for the guidance of the board and should be denied by this board because of that fact. We feel that their program in pursuance of Resolution No. 11, which disregards these factors, violates both the spirit and intent of the Transportation Act, promotes continuous debate, and disturbs morale and occupies the time of this board on matters that have not substantial foundation for a reasonable claim which we hold the law requires on the part of the parties that ask for a wage revision."

"We respectfully suggest that the board's decision condemn this practice as opposed to public interests."

Equipment and Supplies

Locomotives

THE NEW YORK, NEW HAVEN & HARTFORD has ordered from the General Electric Company and the American Locomotive Company, 7 single phase locomotives of a new type. Five of these units are for freight service and will be used on the main line between Oak Point and New Haven. The other 2 are switching locomotives and will be used in general yard service. Whenever double heading, these locomotives will function in multiple unit with the present single phase locomotives.

THE NEW YORK CENTRAL, reported in the *Railway Age* of September 27 as inquiring for 10 Pacific type locomotives, has ordered from the American Locomotive Company for the New York Central Lines, 5 Pacific type locomotives with 23½ by 26 in. cylinders and a total weight in working order of 297,000 lb., and 10 Pacific type locomotives with 26 by 28 in. cylinders and a total weight in working order of 306,000 lb.

Freight Cars

THE TEXAS COMPANY is inquiring for from 500 to 1,000 tank cars of 10,000 gal. capacity.

THE PERE MARQUETTE has ordered 22 underframes from the Pressed Steel Car Company.

THE CHICAGO, BURLINGTON & QUINCY is expected to enter the market soon for repairs to 1,000 freight cars.

THE SOUTHERN RAILWAY has ordered 500 box cars from the American Car & Foundry Co. in addition to those placed last week.

THE CHICAGO, ROCK ISLAND & PACIFIC is having 146 composite gondola cars repaired at the shops of the Western Steel Car & Foundry Co.

THE NORFOLK & WESTERN contemplates buying 3,000 gondola cars. This is in addition to the 1,000 gondola cars authorized to be built in its Roanoke shops, as reported in the *Railway Age* of September 27.

THE GREAT NORTHERN, reported in the *Railway Age* of October 4 as contemplating the purchase of 2,500 additional freight cars, has ordered 900 automobile box cars of 40 tons' capacity from the General American Car Company and 500 ore cars of 75 tons' capacity from the Bethlehem Steel Corporation.

The Chicago & North Western Plans to Spend \$8,000,000 for New Equipment

The Chicago & North Western has been authorized by the board of directors to purchase new equipment at a cost of \$8,000,000 to include from 3,200 to 3,500 freight cars and 50 steel passenger cars.

Passenger Cars

CHICAGO & NORTH WESTERN.—See item under Freight Cars.

THE GREAT NORTHERN is inquiring for 12 underframes for coaches.

THE ERIE RAILROAD has ordered from the J. G. Brill Company one combination passenger and baggage gasoline motor car.

THE SUGAR LAND RAILWAY has bought one combination passenger and baggage gasoline motor car from the J. G. Brill Company.

THE WICHITA FALLS & SOUTHERN has ordered one combination passenger and baggage motor car and one trailer car from the J. G. Brill Company.

THE TEXAS & PACIFIC, reported in the *Railway Age* of September 13 as inquiring for 10 combination baggage and express cars and 3 combination baggage and mail cars, has ordered this equipment from the American Car & Foundry Co.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of September 6 as inquiring for 30 coaches, 8 compartment coaches, 6 chair cars, 9 baggage cars and 10 combination baggage and mail cars, has ordered the coaches and the combination coaches from the Pullman Car & Manufacturing Corporation; the chair, the baggage and the combination baggage and mail cars from the American Car & Foundry Co.

Iron and Steel

THE WABASH is inquiring for 15,000 tons of 90-lb. rails.

THE SOUTH MANCHURIAN RAILWAY is inquiring for 8,000 tons of rails.

THE GREAT NORTHERN is inquiring for 200 tons of structural steel for bridge work.

THE CHESAPEAKE & OHIO is inquiring for 30,000 tons of rails in addition to the tonnage recently placed.

THE CHICAGO & NORTH WESTERN is inquiring for 1,700 tons of structural steel for a bridge and ore chutes.

THE LOUISVILLE & NASHVILLE has ordered 62,129 tons of rail from the Tennessee Coal, Iron & Railroad Company.

THE INTERNATIONAL-GREAT NORTHERN has ordered 5,400 tons of rail from the Tennessee Coal, Iron & Railroad Company.

THE UNION PACIFIC has ordered 599 tons of structural steel for a viaduct in Kansas City, Kans., from the American Bridge Company.

THE CHICAGO GREAT WESTERN has ordered 4,000 tons of rail from the Inland Steel Company and 3,000 tons from the Illinois Steel Company.

THE CHICAGO & NORTH WESTERN has ordered from the American Bridge Company, 1,800 tons of structural steel for an ore derrick at Escanaba, Mich.

THE READING COMPANY, which was reported in the *Railway Age* of September 27 as inquiring for 30,000 tons of steel rails, has ordered 22,500 tons from the Bethlehem Steel Company and 7,500 tons from the Carnegie Steel Company for 1925 delivery.

THE NEW YORK CENTRAL, reported in the *Railway Age* of September 6 as inquiring for 150,000 tons of rail with an option of 25,000 tons additional, has placed tentative orders for 184,650 tons with the following companies: Bethlehem Steel Corporation, 80,200 tons; Illinois Steel Company, 70,600 tons; Carnegie Steel Company, 17,000 tons and Inland Steel Company, 16,850 tons. This item has not as yet been officially confirmed.

Machinery and Tools

THE ILLINOIS CENTRAL has placed an order with the Conveyors Corporation of America for an American steam jet cinder conveyor to be installed at its terminal power plant at Mattoon, Ill.

Track Specialties

THE NORTHERN PACIFIC has ordered 9,000 tons of tie plates of which 6,000 tons were placed with the Illinois Steel Company and the remainder placed on the Pacific coast and with The Railroad Supply Company; 700 tons of angle bars and 14,000 kegs of bolts with the Illinois Steel Company.

Signaling

THE CANADIAN NATIONAL has ordered from the Union Switch & Signal Company color-light signals, three-position, for installation on its line between Port Mann, B. C., and New Westminster Bridge, B. C.; also color-light signals and "automatic flagmen" for use at an electric railroad crossing in Saskatoon.

THE NEW YORK, CHICAGO & ST. LOUIS has contracted with the Union Switch & Signal Company, to install interlocking plants, electro-mechanical, at Fostoria, Ohio, and Arcadia, Ohio; the first to have 13 mechanical and 9 electric levers and the other 8 mechanical and 5 electric. Light signals are to be used; the dwarf signals to be position-light.

Supply Trade News

Karl Kendig, advertising manager of the **Whittman & Barnes Company**, Akron, Ohio, has been advanced to the position of secretary of the company.

The **Conveyors Corporation of America**, Chicago, has appointed the **W. P. MacKenzie Company**, 1234 Callowhill street, Philadelphia, Pa., as its sales representative in southeastern Pennsylvania and southern New Jersey.

Lawrence Miller, assistant sales manager of the Carnegie Steel Company, with headquarters at St. Louis, Mo., has resigned to become manager of the sales department of the **National Enameling & Stamping Company**, with headquarters at St. Louis.

Howard M. Butters, formerly manager of the railway sales department of the **Beaver Products Company, Inc.**, Chicago, in the mid-west territory, has been appointed general manager of the same department. His headquarters will remain at 111 W. Washington street, Chicago.

Michael H. Connelly, formerly sales agent for the American Car & Foundry Co., has resigned to become manager of sales for the **Albany Car Wheel Company**; the **Reading Car Wheel Company** and the **General Steel Casting & Machine Co.**, with office at 8 Lister avenue, Newark, N. J.

The **Woodings Forge & Tool Company**, Verona, Pa., has been organized by **E. Woodings**, who resigned as vice-president and general manager of the Verona Tool Company in 1922. The company has purchased the plant of the Valley Forging Company at Verona, Pa., and will manufacture railway track tools and car forgings.

John W. Meaker, manager of the fence and post sales department of the American Steel and Wire Company, with headquarters at Chicago, has been appointed general manager of the **Cyclone Fence Company**, with headquarters at Waukegan, Ill. He will be succeeded by **H. A. Squibbs**, assistant manager of the fence and post sales department.

The **Premier Staybolt Company**, Pittsburgh, Pa., has appointed **James C. Barr**, district representative in New England, with headquarters at 84 State street, Boston, Mass. **J. P. Armstrong** has been appointed district representative on the Pacific coast, to succeed **E. F. Boyle**, deceased; Mr. Armstrong's headquarters are in the Hobart building, San Francisco, Cal., and **C. E. Fuller, Jr.**, has been appointed representative in the Rocky Mountain district with office in the Barth building, Denver, Colo.

Obituary

Frank Barr Knight, Chicago manager of the Lidgerwood Manufacturing Company, died on October 12 in Chicago from apoplexy.

Henry R. Towne, one of the founders of the Yale & Towne Manufacturing Co., Stamford, Conn., and chairman of the board, died on October 15 at his home in New York at the age of 80.

Carl J. Mellin, consulting engineer of the American Locomotive Company at Schenectady, New York, died at his home in that city on October 15. Mr. Mellin had been identified with naval architecture and mechanical engineering abroad and in this country for more than fifty years.

L. B. MacKenzie, one of the founders of the Railway Electrical Engineer, died suddenly in Chicago recently. Mr. MacKenzie was formerly also the owner of the Signal Engineer, now known as Railway Signaling and published by the Simmons-Boardman Publishing Co. He had been identified with the publication business for a number of years and at

the time of his death was president and editor of the Welding Engineer, a paper devoted to the field of autogenous welding.

George W. Lyndon, president of the Association of Manufacturers of Chilled Car Wheels, whose death in Chicago on October 7 was reported in the *Railway Age* of October 11, was born at Rochester, N. Y., on February 16, 1859. After graduating from high school in 1877 he studied law with Charles K. Ladd, Kewanee and Turner A. Gill at Kansas City, Mo., until 1880 when he entered railway service with the Kansas Pacific at Kansas City, Mo. Shortly thereafter he was transferred to Omaha, Nebr., on account of the consolidation of the Kansas Pacific with the Union Pacific. He remained with the Union Pacific as chief clerk of freight accounts until 1885 when he became traveling auditor of the Kansas City, Ft. Smith & Memphis, with headquarters at Kansas City. In 1887 he was appointed freight auditor, resigning in 1889 to accept a position as freight auditor of the Chicago, Kansas City & St. Paul, now a part of the Chicago Great Western. In 1890 he resigned to become general auditor of the Griffin Wheel Company and the Ajax Forge Company. Later he was made manager of the improvement and review department of these companies, which position he held until 1907. In 1908 he was made western secretary of the Railway Business Association and in the same year he was appointed secretary and treasurer of the Association of Manufacturers of Chilled Car Wheels, which position he held until October 27, 1914, when he was elected president, with headquarters at Chicago.

William A. Garrett

Major W. A. Garrett, general transportation manager of the Baldwin Locomotive Works, Philadelphia, Pa., died on October 10 at his home in Moylan, Pa. William A. Garrett was born on August 18, 1861, at Canton, Miss. He entered railway service in 1876 as a messenger in a ticket office on the Ohio & Mississippi Central. He then went to the St. Louis Union Depot Company, where he worked his way up through various departments to the position of assistant superintendent. From March, 1893, to January, 1896, he was superintendent of the Terminal Railroad Association of St. Louis and terminal superintendent of the Wabash; also for the last two years of this period, superintendent of the St. Louis Merchants' Bridge Terminal Railway. He then severed his connection with the Terminal and was appointed superintendent of the Western division of the Wabash, later serving on the Middle division of the same road. In August, 1899, he was appointed superintendent of the Philadelphia division of the Philadelphia & Reading, later going to the New York division; and in March, 1902, was promoted to general superintendent. The following May he was appointed general manager of the Cincinnati, New Orleans & Texas Pacific and the Alabama Great Southern. From December, 1906, to March, 1907, he was vice-president of the Seaboard Air Line and then to October, 1909, was president of the same road. Major Garrett served from October, 1911, to September, 1912, as chairman of the General Managers' Association of Chicago and the Association of Western Railways. From September, 1912, to 1913, he was vice-president of the Chicago Great Western and then served as chief executive officer to the receivers of the Pere Marquette. In 1914 he made a special study for presidents of lines terminating at Chicago, and in 1917 a special study of French railways for the United States War Department. He acquired his military title when he went to France as major of



W. A. Garrett

engineers in the army. He spent four months abroad with three other members of a commission and submitted a report to the War Department at Washington, on which were based the plans for transportation of American troops and supplies. From May, 1915, to December, 1918, he was assistant general manager of the Remington Arms Company at Eddystone, Pa., leaving that work to enter the service of the Baldwin Locomotive Works on January 1, 1919, where he served as general transportation manager until the time of his death.

Charles A. Carscadin, general sales manager of the Bradford Corporation, with headquarters at Chicago, died suddenly on October 8 at San Francisco, Calif. He was born in Buffalo, N. Y., and entered railway service in 1881 as a stenographer in the employ of the New York Central & Hudson River, now the New York Central, at New York, which position he held until 1882 when he left to become stenographer and secretary to the president of the Michigan Central at Detroit, Mich. From 1887 to 1902 he was a traffic representative of the same road. From the latter date until the present time he was engaged in the railway supply business, having been connected with the Detroit Seamless Tube Company, the Globe Seamless Tube Company and the National Car Equipment Company. He was elected a vice-president of the Joliet Railway Supply Company in October, 1917, which position he held until July, 1922, when he was made vice-president of sales. In November, 1923, upon the organization of the Bradford Corporation, he was elected general sales manager, which position he has held until his death.

THE CHICAGO & NORTH WESTERN brought suit recently against a patron who bought a ticket on May 20, 1923, from Chicago to Denver, Colo., and was given the tourist rate, which had not been put into effect, and the district court at Denver holds that the passenger must pay the difference if a ticket agent sells a ticket for less than the lawful rate. In this case the patron had purchased the ticket from the agent of the Chicago & North Western. After the transaction had been completed the agent found that the rate was not yet in effect. The patron then was notified to remit the difference, but refused. The case was taken into court and Judge Julian H. Moore entered judgment in the District Court at Denver against the patron for \$32.08 and interest since May 20, 1923.



C. A. Carscadin



Keystone
Turbo-Locomotive Shown at Recent Railway Exhibition,
Berlin-Seddin, Germany

Railway Construction

AMERICAN RAILWAY EXPRESS COMPANY.—This company plans the construction of a one-story, 24-ft. by 125-ft., mill construction freight station at Hazard, Ky., to cost \$25,000.

ATCHISON, TOPEKA & SANTA FE.—This company has awarded a contract to the Parr Construction Company, Amarillo, Tex., for the construction of a freight and passenger station at Canyon, Tex., reported in the *Railway Age* of September 13. The station will be of reinforced concrete with stucco exterior and brick trim in the Spanish mission style, and will be 198 ft. long and 52 ft. wide. The total cost is estimated at \$65,000.

CANADIAN NATIONAL.—Plans have been ratified by the taxpayers of Edmonton, Alta., whereby the Canadian National is to build a station and subway on 101st street at an estimated cost of about \$3,000,000, the city's share being \$283,000.

CANADIAN NATIONAL.—This company is calling for bids for the construction of a concrete and steel subway at 101st street, Edmonton, Alta. The subway will be 190 ft. long, 76 ft. wide with 380-ft. depressed approaches and will have a substructure for eight tracks and a superstructure for six tracks.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of a coach shop at Shawnee, Okla., to cost approximately \$200,000.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company has authorized or will soon authorize the construction of the following: Grade separation at Dennison avenue, Columbus, Ohio, to cost \$300,000; six miles of second track near Quincy, Ohio, to cost \$350,000; automatic train control from Indianapolis, Ind., to Hadley, a distance of 20 miles, to cost \$250,000; enginehouse extension at Kankakee, Ill., to cost \$230,000; a freighthouse at Galion, Ohio, to cost \$60,000; and a freighthouse at Bellefontaine, Ohio, to cost \$40,000. A turntable to cost \$50,000 will be installed at the enginehouse at Mt. Carmel, Ill., and a single track truss span bridge will be constructed at Lawrenceville, Ill., at a cost of \$36,000.

GREAT NORTHERN.—This company has awarded a contract to the Barnett & Record Company, Duluth, Minn., for the construction of the reinforced concrete and pile foundation for an ore dock, 724 ft. long and 200 ft. wide, at Superior, Wis., to replace a wooden dock which is to be dismantled.

GULF COAST LINES.—This company has authorized the construction of a 32-mile extension of the San Benito & Rio Grande Valley from Santa Maria, Tex., to Sammons, at a cost of \$500,000. This company has also authorized the construction of a 29-mile extension of the St. Louis, Brownsville & Mexico from a point between Lyford, Tex., and Raymondville on the main line to Edinburg, Tex., the present end of the Edinburg branch, at a cost of \$450,000.

ILLINOIS CENTRAL.—This company will close bids on October 20 for the construction of the cut-off line from Edgewood, Ill., to Fulton, Ky., a distance of 169 miles. This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of a scale pit at Markham yard, Chicago.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—This company plans the construction of an engine terminal, including a five-stall roundhouse and repair shop at Park Falls, Wis. The construction of a passing track with a capacity of 80 cars is also planned.

OKLAHOMA-SOUTHWESTERN.—This company is making preliminary surveys for the construction of an extension from Nuyaka, Okla., to Okemah, a distance of 18½ miles.

PACIFIC FRUIT EXPRESS.—This company will soon call for bids for the construction of refrigerator car repair shops at Nampa, Idaho, reported in the *Railway Age* of July 5.

SOUTHERN.—This company is calling for bids for the construction of a coal chute at Selma, Ala., to cost approximately \$50,000, to replace a structure recently destroyed by fire.

Railway Financial News

ATLANTIC CITY.—*Bonds.*—The Interstate Commerce Commission has authorized an issue of \$3,200,000 of purchase money mortgage 5 per cent bonds to be delivered at par to the Reading Company in reimbursement of funds advanced in connection with the acquisition of additional terminal facilities.

BOSTON & MAINE.—*To Give Up Controlled Road.*—At a hearing before the Vermont Public Service Commission on October 9 it was announced that the Boston & Maine would turn back to local management and operation the St. Johnsbury & Lake Champlain Railroad. The hearing was called to hear protests against a reduction of service on the line, which runs between Portland, Vt., and Swanton, 96 miles. Thornton Alexander, counsel for the railroad, stated that the Boston & Maine would perform its obligations with respect to its guaranty of the bonds of the St. Johnsbury & Lake Champlain, but that in view of the deficits for the last twenty years it was desirable that henceforth the St. Johnsbury road should be operated and controlled independently.

BOWDON.—*Valuation.*—The Interstate Commerce Commission has found the final value for rate-making purposes of this company's property owned and used for common carrier purposes to be \$83,620 as of June 30, 1915, and that of the property used but not owned to be \$26,763.

COLORADO & SOUTHERN.—*Abandonment.*—The Interstate Commerce Commission has denied the petition of the state authorities of Colorado for a further extension beyond October 11 of the effective date of its order authorizing the company to abandon a branch line in Colorado, pending the efforts of the state to have the order overthrown in the courts.

CUBA RAILROAD.—*Chairman.*—Horatio S. Rubens, president of the Consolidated Railroads of Cuba, has been elected chairman of the board of the Cuba Railroad, a new office.

DANVILLE & WESTERN.—*Valuation.*—The Interstate Commerce Commission has found the final value for rate-making purposes of the property owned and used for common carrier purposes, as of June 30, 1916, to be \$1,913,000 and that of the property used but not owned to be \$54,093.

DENVER & RIO GRANDE WESTERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$3,000,000 of refunding and improvement mortgage 6 per cent bonds to be sold at not less than 95 to the Missouri Pacific and the Western Pacific in connection with the reorganization.

DURHAM & SOUTH CAROLINA.—*Valuation.*—The Interstate Commerce Commission has issued a final valuation report finding the value for ratemaking purposes of this company's common carrier property as of June 30, 1917, to be \$460,796.

HOOSAC TUNNEL & WILMINGTON.—*Valuation.*—The Interstate Commerce Commission has found the final value of this company's property for ratemaking purposes to be \$641,864 as of June 30, 1916.

ILLINOIS CENTRAL.—*Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue \$14,256,000 of common stock, to reimburse the treasury for expenditures for improvements and extensions from January 1, 1918, to December 31, 1923, and to be sold to stockholders at par pro rata in the proportion of 10 per cent of their present holdings.

MINNEAPOLIS & ST. LOUIS.—*Receivers' Certificates.*—The receiver has applied to the Interstate Commerce Commission for authority to issue \$750,000 of six-months 5½ per cent receivers' certificates in renewal of the obligation for a like amount now outstanding.

MOBILE & OHIO.—*Abandonment.*—The Interstate Commerce Commission has authorized the abandonment of a portion of a branch line from Delchamps to Alabama Port, Ala., 3.91 miles.

NARRAGANSETT PIER.—*Valuation.*—The Interstate Commerce Commission has found the final value for rate-making purposes of

this company's property used by the Rhode Island Company to be \$310,000 as of June 30, 1916.

PENNSYLVANIA.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority for an issue of \$50,000,000 of 40-year 5 per cent secured gold bonds, to be sold to Kuhn, Loeb & Co., at 95½; the proceeds to be used to make a payment on the 6 per cent promissory note for \$70,225,000 to the director general of railroads which was given in connection with the funding of the Pennsylvania's indebtedness for capital expenditures made by the government during federal control. The note had been reduced by October 2 to \$68,988,000. The company also asked authority to pledge as security for the bonds 100,000 shares of stock of the Pittsburgh, Cincinnati, Chicago & St. Louis; 20,000 shares of the Pittsburgh, Fort Wayne & Chicago; and 150,000 shares of the Cleveland & Pittsburgh.

Equipment Trust Certificates.—The Interstate Commerce Commission has authorized an issue of \$15,750,000 of 4½ per cent equipment trust certificates to be sold to Kuhn, Loeb & Co., at 97.

PITTSBURGH & WEST VIRGINIA.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of \$3,000,000 of 4½ per cent equipment trust certificates, the proceeds to be used to retire 6 per cent preferred stock, to be underwritten by Dillon, Read & Co., at 97.109.

ROSWELL, LUBBOCK & MEMPHIS SHORT LINES.—*Incorporation.*—Purchase of the 110 miles of completed grade and other property of the Altus, Lubbock, Roswell & El Paso by Clifford Grunewald of Houston, Texas, and associates, has been followed by the incorporation of the Roswell, Lubbock & Memphis Short Line Railroad by Mr. Grunewald, E. C. Noble, C. F. Stevens and Carey Shaw, all of Houston. The new company has a capital stock of \$250,000, and its purpose, according to its charter, is to construct a railroad from Wellington, Texas, to Roswell, N. M. The distance in Texas covered by the charter is 227 miles. A separate company will be formed to build that part of the proposed road from the Texas-New Mexico line to Roswell, about 100 miles. The original promoters who built the Altus, Lubbock, Roswell & El Paso line from Altus, Okla., to Wellington, a distance of 60 miles, sold that part of the road to the Wichita Falls & Northwestern about twelve years ago.

SOUTHERN PACIFIC.—*Lease.*—The Interstate Commerce Commission has authorized this company to acquire control by lease of the properties of the Arizona & Eastern and the Phoenix & Eastern, about 382 miles, which are now controlled by the Southern Pacific through ownership of practically all the capital stock.

ST. JOHNSBURY & LAKE CHAMPLAIN.—*To Be Operated Independently.*—See Boston & Maine.

WABASH.—*Blanket Mortgage Planned.*—A special meeting of the stockholders has been called for December 29, next, to authorize a blanket mortgage to provide for the future financial needs of the property. It is proposed that new general and refunding mortgage bonds in aggregate principal amount will not exceed one and one-half times the par value of the outstanding capital stock of the company.

WOOD RIVER BRANCH.—*Valuation.*—The Interstate Commerce Commission has found the final value for rate-making purposes of this company's property as of June 30, 1915 to be \$115,537.

Dividends Declared

Mahoning Coal Railroad.—Common, \$10.00, payable November 1 to holders of record October 22.

Pullman Company.—\$2.00, quarterly, payable November 15 to holders of record November 1.

Reading.—First preferred, 1 per cent, quarterly, payable December 14 to holders of record November 25.

Vermont & Massachusetts.—3 per cent, payable October 7.

Trend of Railway Stock and Bond Prices

	Oct. 14	Last Week	Last Year
Average price of 20 representative railway stocks	67.96	69.53	58.65
Average price of 20 representative railway bonds	87.91	87.98	81.88

Railway Officers

Executive

Elmer R. Oliver, freight traffic manager of the Southern, with headquarters at Washington, D. C., has been elected vice-president in charge of traffic, with the same headquarters, succeeding Edward H. Shaw, whose death at Washington on October 7 was announced in the October 11 issue of the *Railway Age*.

Financial, Legal and Accounting

S. H. Cady, attorney for Wisconsin of the Chicago & North Western, has been promoted to assistant general solicitor, with headquarters at Chicago, a newly created position. **W. T. Faricy** has been appointed commerce attorney, with headquarters at Chicago, succeeding **R. H. Widdicombe**, who has retired on account of ill health.

C. M. Scott has been appointed assistant treasurer of the Southern Pacific, with headquarters at San Francisco, Calif., succeeding W. F. Ingram, deceased. **J. E. Fraser**, cashier, has been promoted to deputy assistant treasurer, with headquarters at San Francisco. **G. S. Evans**, assistant cashier, with headquarters at San Francisco, has been promoted to cashier, with the same headquarters, succeeding Mr. Fraser.

Elvert M. Davis, whose appointment as assistant general counsel of the Pennsylvania, with headquarters at Pittsburgh, Pa., was announced in the *Railway Age* of October 4, was born on October 21, 1875, at Saranac, Mich. He attended the Ionia, Mich., high school and the Olivet college, Mich., and was graduated from the Detroit College of law in 1899. On January 1, 1915, he entered railway service as assistant counsel for the Grand Rapids & Indiana (now a part of the Pennsylvania) and during the period of federal control he was appointed assistant general solicitor. At the termination of federal control he remained with the Grand Rapids & Indiana as assistant general solicitor and on December 1, 1922, he was appointed assistant general solicitor of the Pennsylvania at Pittsburgh, following the leasing of the Grand Rapids & Indiana to the Pennsylvania, which position he held until the time of his appointment as assistant general counsel.

Operating

W. H. Johnson has been appointed terminal trainmaster of the Seaboard Air Line, with headquarters at Jacksonville, Fla., succeeding W. C. Kirby, promoted.

Bogue Vandercook has been appointed superintendent of the Long View, Portland & Northern, with headquarters at Long View, Wash., succeeding **G. L. Anderson**, who has been acting superintendent in addition to his duties as traffic manager.

Macy Nicholson, general manager of the Chicago, Milwaukee & St. Paul, Lines West, with headquarters at Seattle, Wash., has resigned to become a member of the Train Service Board of Adjustment for the western region, with headquarters at Chicago. **O. N. Harstad**, general superintendent of the Southern district, with headquarters at Chicago, has been promoted to assistant general manager, Lines East, with the same headquarters, succeeding **C. O. Bradshaw**, promoted to general manager, Lines West. **C. H. Buford**, superintendent of the Terre Haute division, with headquarters at Terre Haute, Ind., has been promoted to general superintendent of the Southern district, with headquarters at Chicago, succeeding Mr. Harstad. **Norman A. Ryan**, assistant superintendent of the Terre Haute division, with headquarters at Terre Haute, has been promoted to superintendent, with the same headquarters, succeeding Mr. Buford. **T. P. Horton** has been appointed assistant superintendent of the Terre Haute division, succeeding Mr. Ryan.

C. O. Bradshaw, assistant general manager of the Chicago, Milwaukee & St. Paul, Lines East, with headquarters at Chicago, has been promoted to general manager, Lines West, with headquarters at Seattle, Wash., succeeding M. Nicholson, resigned. He was born on November 11, 1884, at Grand River, Iowa, and entered railway service in June, 1899, as a telegraph operator and agent in the maintenance department of the Chicago, Burlington & Quincy. He was appointed operator on the Great Northern in July, 1902, and was subsequently promoted to train dispatcher, chief train dispatcher, trainmaster and assistant superintendent. Mr. Bradshaw was appointed division superintendent

on the Chicago, Milwaukee & St. Paul, in January, 1917, and was later promoted to general superintendent. He was subsequently promoted to assistant general manager, Lines East, with headquarters at Chicago, and remained in that position until his recent promotion to general manager, Lines West.

Traffic

M. Z. Anderson has been appointed general agent of the Ashley, Drew & Northern, with headquarters at Monticello, Ark.

W. L. Wright has been appointed assistant foreign freight agent of the Canadian Pacific, with headquarters at Vancouver, B. C.

J. A. Hickman has been appointed industrial agent of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio.

J. W. Sharpe has been appointed general agent in the passenger department of the Chicago, Burlington & Quincy, with headquarters at Omaha, Nebr., a newly created position.

J. M. Fulton, assistant general passenger agent of the Southern Pacific, with headquarters at Reno, Nev., has been appointed also assistant general freight agent, with the same headquarters.

J. W. Hilbarger has been appointed general agent in charge of solicitation of both freight and passenger traffic for the Missouri & North Arkansas, with headquarters at Louisville, Ky., a newly created position.

H. E. Bulla has been appointed general agent in the passenger department of the Chicago Great Western, with headquarters at Omaha, Nebr., succeeding M. B. Craig, who has been transferred to Des Moines, Iowa, as reported in the *Railway Age* of September 13.

J. N. Campbell, general freight and passenger agent of the Louisiana Railway & Navigation Company, with headquarters at Shreveport, La., has been promoted to traffic manager, with the same headquarters, a newly created position, and the position of general freight and passenger agent has been abolished.

H. R. Daly, general agent in the passenger department of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Peoria, Ill., has been appointed general agent in the passenger department of all New York Central lines, with the same headquarters, his jurisdiction extending over northern Illinois.

P. A. Cox, general agent of the Canadian Pacific, with headquarters at Shanghai, China, has been appointed assistant



C. O. Bradshaw

oriental manager with the same headquarters, succeeding E. F. L. Sturdee, acting assistant manager, who has been appointed general passenger agent for the Orient, with headquarters at Hongkong, China.

W. H. Cunningham, New England freight agent of the New York, Chicago & St. Louis, with headquarters at Boston, Mass., has been promoted to assistant general freight agent of the Nickel Plate district, with headquarters at Chicago, succeeding J. P. Hayes, who has resigned. **E. H. Spangenberg** has been appointed New England freight agent, with headquarters at Boston, succeeding Mr. Cunningham.

William D. McVey, whose appointment as general freight and passenger agent of the Rutland, with headquarters at Rutland, Vt., was announced in the *Railway Age* of September 20, was born on October 23, 1881, at Perth, Ont., and received his education in the common and high schools of Detroit, Mich. He entered railway service in 1898 as a messenger in the telegraph office of the Michigan Central at Detroit, and later in the same year he became office boy in the office of the general freight traffic manager. A year later he became a clerk in the same office and in 1904 he became a rate clerk in the office of the assistant general freight agent at Bay City, Mich. In 1907 he was appointed soliciting freight agent, with the same headquarters and in 1909 he became assistant chief clerk to the general freight traffic manager at Chicago. He was appointed commercial agent at Toledo, Ohio, in 1910 and in 1915 he was promoted to general agent, with the same headquarters. In 1920 Mr. McVey was promoted to assistant general freight agent at Buffalo, N. Y., and two years later was transferred to Detroit, in the same capacity, which position he held until his recent appointment as general freight and passenger agent of the Rutland.

Leo Solloway, whose appointment as Asiatic freight agent of the Canadian Pacific, with headquarters at Montreal, Que., was announced in the *Railway Age* of October 11, page 670, was born at Vancouver, B. C., in 1895. He began railroad work as a stenographer in the steamship department of the general freight office of the Canadian Pacific at Vancouver in 1910 and remained in that department until 1915, when he enlisted in the Canadian army with the 72nd Highlanders. When he returned from overseas in the fall of 1917, he entered service in the steamship export department of the Canadian Pacific at Vancouver and in 1918 he was appointed assistant to the agent of the British Ministry of Shipping at Vancouver. In June, 1919, he became chief clerk to the Asiatic freight agent of the Canadian Pacific at Montreal, Que., and two years later he was appointed chief clerk to the general foreign freight agent. In May of this year he was appointed acting Asiatic freight agent at Montreal and continued in that capacity until recently when he became Asiatic freight agent.

Engineering, Maintenance of Way and Signaling

R. E. Caudle, assistant engineer of structures of the International-Great Northern, with headquarters at Palestine, Tex., has been promoted to district engineer, with headquarters at Houston, Tex., succeeding C. R. Byram, who has resigned. **M. B. Kent**, assistant engineer, with headquarters at San Antonio, Tex., has been promoted to assistant engineer of structures, with headquarters at Palestine, succeeding Mr. Caudle. **S. J. Leseuer**, assistant engineer, with head-

quarters at Palestine, has been transferred to San Antonio, succeeding Mr. Kent.

Mechanical

H. Y. Harris, general foreman of the car department of the Seaboard Air Line at Tampa, Fla., has been appointed master mechanic of the Florida division, with the same headquarters, a newly created office.

Purchasing and Stores

J. W. Cockrill has been appointed division storekeeper of the Illinois Central, with headquarters at Clinton, Ill., succeeding R. E. Downing, who has resigned to engage in other business.

J. L. Quarles, storekeeper of the Chesapeake & Ohio at Richmond, Va., has been promoted to assistant general storekeeper, with headquarters at Clifton Forge, Va., succeeding A. H. Young, Jr., who has been assigned to special work. **J. G. Hilgen** has been appointed storekeeper at Richmond, Va., and **C. E. Branson** has been appointed storekeeper at Russell, Ky.

Obituary

Robert H. Reid, supervisor of bridges of the New York Central, with headquarters at Cleveland, Ohio, died at his home in that city on October 15, at the age of 59.

C. T. Boone, superintendent of the Eastern division of the Chicago & North Western, with headquarters at Norfolk, Nebr., was killed in an automobile accident in that city on October 12. Mr. Boone was born on February 3, 1865, at Independence, Iowa, and entered railway service in November, 1882, as a freight brakeman on the Chicago, Milwaukee & St. Paul. He later served as a locomotive fireman and engineer on the Baltimore & Ohio, and entered the service of the Chicago & North Western in July, 1891, as a locomotive engineer. Mr. Boone was promoted to road foreman of engines in July, 1901, and in February, 1902, was promoted to trainmaster. From July, 1902, until November, 1905, he served as special inspector in the office of the general superintendent at Chicago, on the latter date being appointed trainmaster at Eagle Grove, Iowa. Mr. Boone was promoted to superintendent of the Iowa division in July, 1909, and was transferred to the Wyoming & Northwestern, now a part of the Chicago & North Western, in May, 1911. He was appointed superintendent of the Black Hills division in August, 1920, and was later transferred to the Eastern division, where he remained until his death.



Leo Solloway



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